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COMMENTARIES

UPON

B O E R H A A V E's

A P H O R I S M S

CONCERNING THE

KNOWLEDGE and CURE of DISEASES.

BY

BARON VAN SWIETEN,

Counsellor and First Physician

To their Majesties the Emperor and Empress of Germany;

Perpetual President of the College of Physicians in Vienna;

Member of the Royal Academy of Sciences and Surgery at Paris;

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&c. &c. &c.

Translated from the L A T I N.

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ON

DOCTRINES AND
A. P. H. O. R. I. S. M.

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BARON VAN SWIETEN

Consultant and First Physician

To His Majesty the Emperor and Emperor of Germany

Imperial Physician of the Imperial Palace and of the

Imperial Household of the Emperor and Empress

at Berlin in the Royal College of Physicians

1745

Translated from the Latin



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THE
C O N T E N T S
OF THE
FOURTEENTH VOLUME.

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COMMENTARIES

UPON

BOERHAAVE's

APHORISMS

CONCERNING THE

KNOWLEDGE and CURE of DISEASES.

Of DIFFICULT DELIVERIES.

§. 1310. **A** DELIVERY is difficult, either from a defect of the mother, or of the child.

No delivery, properly speaking, can be called absolutely easy, since God pronounced this sentence against Eve for her transgression: "I will greatly multiply thy sorrow and thy conception: in sorrow shalt thou bring forth children^a." Childbearing is therefore always attended with pain, sometimes more grievous and lasting, sometimes more slight and of shorter duration; but it is in no case totally exempt from pain. It may sometimes happen, that pain may not be felt, even when there is a cause capable of producing it in the body; but then, according to Hippocrates (as has been observed at §. 1.) "those who do not feel pain, when any part of the body is affected by a cause productive of pain, are not in their perfect senses:" for it sometimes happens, that women in convulsions, or an apoplectic fit, are delivered of children without feeling any pain; but the delivery cannot be said to be easy, as the worst

VOL. XIV. B. consequences

^a Gen. iii. 16.

consequences are then to be feared : for this reason Hippocrates^b justly represents a delivery without pain as dangerous.

From these considerations, it is obvious, that it cannot be an easy matter to give an adequate definition of a difficult delivery, since in the course of nature no delivery is free from pain and anguish. For it seems hard to assign a boundary, by which an *easy* delivery may be distinguished from another, which may be properly called *difficult*, though it cannot be reckoned amongst the *most* difficult : for we can form a judgment concerning these only by comparing them together. Some women are delivered with much greater ease than others ; and even in the same woman a delivery is at one time attended with less pain than at another, as has been frequently remarked. Hippocrates^c, having advanced that a woman brings forth with ease when the child comes out of the womb with its head foremost, but with difficulty when it comes out transversely or puts forth its feet first, adds, “ Women
“ suffer most at their first lying-in, because the pains
“ of child-bearing are new to them ; and they suffer
“ pain in every part of the body, but chiefly in their
“ loins and their hips, for their hips stretch and jut
“ out in delivery. Those who have often been delivered,
“ feel less pain than those who are delivered
“ for the first time ; but those who have been most
“ used to child-bearing feel least pain of all.” Thus though he ascribes the ease and difficulty of delivery to the various position of the foetus, he acknowledges that delivery is difficult to women who are brought to bed for the first time, let the position of the foetus be what it will.

A difficult delivery has by many been defined, “ A
“ protrusion of the foetus with great pain, and with
“ danger to the mother, the child, or both.” But most women in labour are delivered with difficulty, though not with such imminent danger either to the
mother

^b Coac. Prænot. n^o 538. Charter. Tom. VIII. p. 884.
Natura Pueri, cap. 2. Charter. Tom. V. p. 324.

^c De

mother or her offspring. Mauriceau^d has divided delivery into *legitimate* or natural, and *illegitimate* or that which is against nature. He enumerates four conditions as necessary to a delivery, in order to denominate it legitimate and natural, *viz.* that it should be made in a proper time after conception, that it should be speedy and not attended with untoward accidents, that the fœtus should come out alive, and in a favourable attitude. He maintains, that if any of these conditions should be wanting, the delivery should not be called legitimate and natural, but contrary to nature; and it is the more contrary to nature the more it is deficient in these conditions. Certain it is, however, that in women who are brought to bed for the first time, delivery is seldom speedy, though all the concomitant circumstances should be natural. Indeed, though it is the received opinion that every expeditious delivery is favourable, and though women in labour desire nothing more, the skilful are of a very different opinion^e. A speedy delivery is seldom hurtful to the child: but it is often dangerous, and sometimes fatal, to the mother; for she runs a risk of dying of a violent hæmorrhage soon after she is brought to bed. Add to this, that the parts through which the new-born infant is to pass give way, and are gradually dilated in a slow delivery; whereas they are often torn in an expeditious one, whence very dangerous consequences may arise.

Besides the *natural* delivery, and that *against* nature, Mauriceau in another place^f speaks of the *laborious* delivery, in which both the mother and the child, though in a favourable position, suffer more than usual; he however reduces the *difficult* delivery to the same class with the *laborious*.

As Mauriceau^g has laid it down as a rule that a delivery, in order to be denominated legitimate and natural, should be at a proper distance of time from conception, and that is generally the space of nine

B 2

months,

^d Liv. ii. chap. 2. p. 202.
^e Ibid. chap. x. p. 259.
^f Ibid. chap. x. p. 259.
^g In the passage above cited.

^e Lévret. l'Art des Accouch.
^g In the passage above cited.

months, we know at what time a delivery is to be expected. We at the same time know, that an exact calculation cannot easily be had in this case ; as all women are not aware of the precise time of conception, as many only think themselves with child when they perceive their menses cease to flow, and as some retain something of their monthly emissions after they are with child. For these reasons, most of those who have written upon midwifery are of opinion, that a delivery may be natural in ten months or more after conception, as well as in nine. Thus we read^h, “ That a woman of a good character and unquestion-
 “ ed modesty, was brought to bed eleven months af-
 “ ter the death of her husband ; and that a suit was
 “ commenced on account of the time, because it was
 “ written by the *decemviri* that a man is born in the
 “ tenth, and not in the eleventh month after concep-
 “ tion : but that the emperor Adrian, having taken
 “ cognisance of the cause, declared that a legitimate
 “ child might be born in the eleventh month after
 “ conception. This decree of the emperor Adrian
 “ we have read ; in it he affirms that he decided this
 “ cause, after having inquired into the opinions both
 “ of ancient philosophers and physicians.” La Motteⁱ, so justly celebrated for his candour, enumerates many cases, which shew that the time which elapses between conception and delivery sometimes exceeds the space assigned by the emperor Adrian. It is his opinion, that this happens chiefly when the fœtus, being weak, has occasion to make a longer stay than usual in the mother’s womb, in order to draw necessary nutrition, and swell to a proper bulk. We meet with a more remarkable case^k of a woman, who, after having been six weeks married, began to feel the pains to which women with child are subject, yet her monthly emissions did not discontinue. About the middle of the fifth month she felt the child move, and her breasts began to swell ; on the eighth month a few drops of thick reddish milk flowed

^h Aul. Gellii noct. Attic. lib. iii. cap. 16. p. 103.
 des Accouch. &c. liv. i. chap. 28. p. 121, &c.
 Scienc. l’ann. 1753. Hist. p. 139. et seq.

ⁱ Traite
^k Acad. de

flowed from her breasts: in the beginning of the ninth month, her legs swelled, and her veins were swoln: on the eleventh month, she was seized with violent pains in the back and belly: the midwife being sent for, did not find her any way in readiness to be brought to bed; the day following, about three pounds weight of reddish water flowed from her; her pains lasted three days together; her menses flowed, but not copiously; her pains ceased, and she was very well; her belly continued swelled, and her breasts swelled excessively.

She consulted the most skilful physicians and surgeons; and amongst others the celebrated Winslow, who was at a country house in the neighbourhood; all of whom affirmed that she was pregnant.

On the eighteenth month of that extraordinary pregnancy, the monthly flowing, which was till then red, turned white, and constantly returned at the usual time; she declared that she felt the motion of the child: a very skilful chirurgion, however, having touched her abdomen, declared that he could perceive no motion; but he found that her belly was stiff like a drum. For sixteen months she continued in the same state, excepting only that the swelling in her legs subsided, the veins still remaining swoln. On the 35th month she was delivered of a male child, that lived three days. The mother recovered her health after being brought to bed. The child and the placenta were of the usual size. The same woman, soon after her delivery, again exhibited all the symptoms of pregnancy; and thinks she feels the motion of a child in her belly swelled to an enormous size. In this condition she has been five years and eight months, but in good health, and able to do her accustomed work.

But it is common with some women to be delivered before nine months are at an end. La Motte¹ saw a young woman, who was delivered of a son seven months after she was married, which made the husband suspect his wife's chastity. In the first commerce she had with her husband after her delivery,

¹ Traite des Accouch, liv. i. chap. 28. p. 122.

she again conceived, and was delivered of a second son at the end of seven months: they both grew up to be men, and served in the army. The same woman's daughters were delivered in the same manner, in the seventh month after conception; so that it seems to have run in the blood of the women belonging to this family, to bring forth children in the seventh month after conception. We meet with a similar case in the same author.

Hence Mauriceau lays it down as a rule ^m, that delivery is then effected, when the womb cannot bear to be stretched more than it has been; which either depends on the womb itself, as has been observed in the foregoing chapter; or upon the rapid or tardy increase of the foetus that fills the womb. For this reason, he imagines, that women who are with child of twins are more speedily delivered than others, because the womb is more distended and irritated by the more frequent motion of the foetuses. Children born seven months after conception, he looked upon as having so bad a chance for living, that he assures us he has known but few live above fifteen days. The observations of La Motte and others prove the contrary; and I remember to have seen some young fellows of robust and healthy constitutions, who to my certain knowledge were born seven months after conception. It is true, indeed, they are, generally speaking, weak and of low stature. If a foetus, not higher than the palm of a man's hand, may be so brought up as to live to the age of eighty, this may be much more reasonably hoped of a child born seven months after conception. Nor was it the fortune of Licetus alone (see §. 1309.) to be bred up to manhood, contrary to all expectation; a later and more extraordinary instance proves the same thing. In the fifth month after conception, a foetus was brought into the world alive, but puny and weak to excess: it did not cry, and it seemed hardly able to breathe; the eyes were closed, the limbs were flabby and relaxed; some little motion and the warmth of the body were the only signs of life it ex-

hi-

hibited. Being wrapt up in soft linen, it was cherished with a fostering heat; a little lukewarm milk was given it drop by drop; this it swallowed; it continued exactly in the same state for four whole months; its motion was very inconsiderable, and it uttered no cry: it voided no excrements. When these four months were at an end, it began to cry, to void excrements, to move its body, to suck, to grow like other children; and that so well, that in about sixteen months after its birth it surpassed other children of the same age and strength^a. The excellent author was justly surpris'd, that that premature fruit could live as a foetus in the time that preceded its maturity.

It appears from the whole history of pregnancy, that the foetus makes daily advances towards perfection in the womb, and acquires new strength; wherefore it is not easy to discover why a foetus of eight months should be weaker, and less capable of living than a foetus of seven months, as Hippocrates maintains, who is followed by many others: but nothing can be more true, than that some maxims hold good in physic, though the opposite opinion seems to be supported by the deductions of reason. Thus Peuo informs us, that many robust and vigorous children are born seven months after conception; but that those born eight months after conception are generally weak and short-lived. Mauriceau^p maintains the opposite opinion, and supports it by a variety of observations. Drelincourt^q may be consulted upon this subject, who seems to have proved tolerably well, that a foetus of eight months, if its birth be owing to disease or accident, is in danger; but if it comes into the world of its own accord, has as good a chance for living as a foetus of seven months.

It is sufficiently evident from what has been said, that the time between conception and delivery is very doubtful, not in different women only, but even in the same woman. We shall now treat of those symptoms.

^a Brouzet, *Essai sur l'Education Medic. &c.* p. 37, *et seq.* in notis.

^p La Pratiq. des Accouch. liv. i. chap. 9. p. 95.

^p In the passage last cited.

^q In *Opuscul.* p. 120.

toms which shew that delivery will shortly happen, as well as of those which shew that it is upon the point of being effected, and by what signs a physician may form a judgment whether a delivery will prove easy or difficult.

A few days before delivery, the swelling of the abdomen descends; the swelling in the upper part of the abdomen subsiding, an unusual pain is felt in the loins; urine comes frequently, but with difficulty, from the patient; a slimy humour flows from the vagina^r. These symptoms give just grounds to conclude that the time of delivery is drawing nigh, but they do not amount to a certain proof: for at the time that the child is turned, which was before placed with its head towards the upper parts of the womb, many of these symptoms occur. This turning of the foetus often happens on the eighth month of pregnancy; sometimes sooner, sometimes later; and then delivery is thought to be at hand. Mauriceau^s informs us that he has often seen this; and gives a remarkable instance of a surgeon's wife, who in her eighth month, whilst the child was turned about, felt pains so violent in her abdomen, that she took it for granted she was just going to be delivered, and therefore prepared every thing necessary upon the occasion: but she continued to bear the child during a whole month, and was at last happily delivered. I have known the same thing happen to my own wife, and to many more. Wherefore, whilst we remark such symptoms, we should take care not to be too forward in pronouncing delivery to approach.

We are then certain that a woman with child is upon the point of being delivered, when she feels a pain in her loins, not continued, but recurring by fits; which pain passing through the sides of the abdomen, ceases about the pubes, with a sense of a sort of depressing tenesmus. These are by midwives called the *true* pains. But they are called *spurious*, if the pains are felt in the abdomen alone; or if, after having taken

^r Mauric. traite de malad. des femm. grosses. Tom. I. liv. ii. chap. 2. p. 211, 212.

^s Ibid. chap. 5. p. 235.

ken rise in the abdomen, they run back towards the loins: for those spurious pains do not promote the delivery; on the other hand, they rather retard it; and if they should prove very acute, they ought to be removed by opiates, and then they are succeeded by the real pains which precede delivery. This I have observed both in my own wife and in many other women. The pulse then becomes higher, and more quick. Respiration appears to be more difficult, whilst the woman in labour, making an effort at every pang, keeps in her breath. All these symptoms are increased as delivery approaches, whilst violent pains follow each other with a rapid succession. Hippocrates has expressed himself thus: *I assert that a woman, when she is about to be delivered, breathes quick, &c. but she breathes fastest when she is nearest to delivery, and then she feels the greatest pain in her loins; for her loins are struck by the fœtus*^c. Mauriceau^u has collected all these symptoms: at the same time adding, that the pudenda then swell, and that women in labour are then subject to vomit; which he tells us is not a bad sign as is vulgarly thought, but an indication of an approaching delivery. This I have often seen, and is confirmed by Manningham in these words: “ Vomiting, during the pains of delivery, is beneficial if it be “ not excessive^x.” La Motte^y informs us, that he attended a woman in labour who vomited at every pang, and thereby suffered great torment, having never been used to any thing of the kind when brought to bed before. Whilst he prepared to relieve her, the last pang came, which forced a child in perfect health out of her womb. Instructed by experience, he represents vomiting as a symptom of approaching delivery; he however advises those who attend a woman in labour, not to be too hasty to prophecy a happy delivery, as unhappy accidents often happen unexpectedly, and with-
out

^c *Affero autem mulierem, ubi pariet, crebrum spiritum emittere, &c. Tum vero potissimum crebro respirat, ubi partui proxima est, tumque maxime lumbis dolet; nam et lumbi a fœtu percutiuntur. De Morb. Mulier. lib. i. cap. 32. Charter. Tom. VII. p. 749.*

^u In the place already cited, p. 212. ^x Art. Obstetric. Compend. p. 42. ^y *Traite des Accouch. chap. 25. p. 114.*

out any apparent cause. With regard to that vomiting which happens at the time of delivery, Manningham ^z gives us to understand, that if vomiting follows as soon as the violent pains begin to cease, there is reason to fear the womb's being torn.

Mauriceau has likewise observed ^a, that when delivery is at hand, the body of a woman in labour trembles, especially the legs and thighs; and that then she feels no cold, but on the contrary is warm all over. That trembling, however, is not a bad omen; it is rather a favourable one. For we read in scripture ^b, that God said to Moses “*Hodie incipiam mittere terrorem at-*”
 “*que formidinem tuam in populos qui habitant sub*”
 “*omni cœlo; ut, audito nomine tuo, paveant, et in*”
 “*morem parturientium contremiscant, et dolore teneantur.*” For then, or soon afterwards, it comes to pass, that the humours that flow from the womb are tinged with blood, which is justly looked upon as a sign that the delivery will be soon completed; nor does that inconsiderable flowing of blood proceed from the mouth of the womb's being torn, but rather from the skin's being separated from the womb, whilst the humours are ready to run out, as was shewn in the preceding chapter upon the Diseases of Women in Labour ^c. Great care should be taken to distinguish whether the pregnant woman feels the true pains of delivery or not; for Manningham ^d has taken care to apprise us, that the child, turning itself in the last month that it is carried in the womb, often occasions spurious pains by its unusual motion, which bring on the efforts to delivery too soon. Unskilful midwives sometimes advise preëgnant women to second, by powerful efforts, the pains which arise from the turning of the child, not quite ripe for delivery, especially if they find the mouth of the womb already open. Mauriceau ^e relates a case of this kind. He was sent for to a pregnant woman, who thought she was upon the point of being brought to bed, two midwives who

were

^z Art. Obstetric. Compend. p. 15.

^a In the place above cited,

p. 212, 213.

^b Deuteron. chap. ii. ver. 25.

^c Mauric. traite

des malad. des fem. gross. Tom. I. p. 213.

^d Art. Obstetric.

Comp. p. 14.

^e In the place last cited, p. 214.

were present affirming the same thing. Examining her womb by his touch, he found that it was opened the breadth of his thumb: he touched the child's head, covered with membranes which stuck to it, lax and yielding, and were neither tense nor turgid. Tho' she felt tormenting pains in her womb for six days together, and though the mouth of her womb was open, Mauriceau declared that he found in her no disposition to delivery; and her pains ceased, as well by the application of a gentle clyster, as by the heat of the bed; and the pregnant woman could for a whole month do the business of her house with alacrity; the month being expired, she was happily delivered of a living child. From hence he has justly inferred, that all the symptoms of delivery are doubtful, excepting only the true pains, which beginning at the loins, and advancing towards the pubes, discontinue, with a sense of tenesmus; and at the same time the waters begin to gather; that is, membranes may be felt with the finger, turgid with water collected between them and the head of the child, which bear upon the open mouth of the womb and fill it. For Manningham^f has laid it down as a maxim in midwifery, that the opening of the mouth of the womb alone, is a fallacious token of approaching birth: "The opening of
 " a pregnant woman's womb, says he, is not always
 " a sure token of approaching delivery; for, some-
 " times a month before delivery, the orifice is in some
 " women found so wide open, that a man might
 " thrust his finger into it."

When it is evident, from indubitable signs, that birth is approaching, the same author gives us this excellent advice^g: "In the beginning of the pregnant
 " woman's throes, the fœtus and the situation of the
 " womb should be sought," in order to form a judgment of the ease or difficulty of the ensuing delivery, that midwifery may apply in due time the requisite assistance, in order to alter and correct the disadvantageous situation of the fœtus: for many women in labour have perished, whose lives might have been saved

^f Ibid.^g Ibid. p. 15.

ved if proper care had been taken of this. Complaints of this negligence or want of skill in midwives, occur in every author that has wrote upon the subject.

The following are the chief signs from which midwives are used to prophecy a happy delivery : “ If the
 “ lowest part of the womb should fall into the pelvis,
 “ so that it may be easily touched in the entrance of
 “ the vagina ; if the mouth of the womb be thin, soft,
 “ and wide open ; and if it be found at the opening
 “ of the mouth of the womb, that the head of the in-
 “ fant is in a proper attitude to come out, neither the
 “ arm nor the navel-string coming between ; if the
 “ waters sink to a level surface ; an easy and expedi-
 “ tious delivery may be expected ^h. ”

All these symptoms are favourable ; yet from these we cannot have any certainty concerning other obstacles which may lie hid : the circumvolution of the navel-string round the neck or any other member of the child may render delivery difficult ; a hydrocephalum, a swelled abdomen, or a monstrous figure, may have the same effect. So that from the above symptoms it may be concluded, that all things promise a happy delivery ; but no certainty of an easy and happy delivery can be had from them : thus there will always be occasion for some caution in making this prognostic.

Delivery is foreseen to be difficult, when symptoms opposite to those taken notice of above are observed : “ When the mouth of the womb is raised high ; ei-
 “ ther not open at all, or but a little open ; when it
 “ is sharp, rough, and hard ; or the humours forced
 “ into a long narrow passage : ” For then the membranes, distended with humours, will not form a plain or a roundish swelling, but will be lengthened out in the shape of a pudding. If from these symptoms a difficult delivery should be foreseen, it should not be told the woman in labour, but to her friends and those present, and that with prudent caution.

It is evident from what has been said, that the impediments which render delivery difficult, are owing
 either

^h Daventer novum lumen obstetric. cap. 18. p. 62, 63.

either to the mother or the foetus; and sometimes to both, and then delivery becomes extremely difficult. These particulars should be considered separately.

§. 1311. **F**ROM a defect in the mother, when she wants strength to expel the foetus, or from a defect in the natural parts themselves.

As the head of a man is larger, in proportion to the rest of his body, than that of other animals, a woman is delivered with greater difficulty than any other animal, and has occasion for a much greater effort; for which purpose a due degree of strength is required. It has often been said, that a robust and healthy foetus assists its mother's efforts by its own, that it may the sooner make its way to the light of heaven: but if all particulars are duly weighed, it will be acknowledged that the foetus can give but little assistance upon this occasion. By the motion of its limbs, and by the dilating of the womb occasioned by the head's entering it, it irritates it, and excites the efforts of the mother, by which alone it is forced out: for he who has but once seen a woman in labour, cannot be ignorant with what efforts, what force, a lying-in woman exerts herself, whilst the foetus comes into the world. She keeps in her breath; all the muscles of her body are stiff; she fixes her feet to some firm prop, and with her hands eagerly catches at the standers-by, or whatever comes in her way: the muscles of the abdomen, the back, and the neck, are stiff: her face is red, swelled, and bloated; and, to say all in one word, the whole strength of her body is at once exerted to drive out the foetus, which at the time of delivery seems to be totally passive, and not in any respect active; and even if it was active, the little strength of its tender body could not in the least assist the strong efforts of the mother.

I am not ignorant that Harvey has laid it down as a rule, "That in the birth of animals that bring forth living creatures, the chief cause of delivery is in the

“ foetus; I mean, as to its effort; not to its weight,
 “ as Fabricius would have it, &c. The foetus itself
 “ runs its head against the inclosures of the womb,
 “ opens them by its own strength, and struggles into
 “ day-light ^a.” He thought his opinion confirmed;
 because in creatures that lay eggs, the foetus itself,
 and not the mother, breaks the shell of the egg; and
 this happens likewise in the eggs of many insects, and
 of fishes. But we should be very cautious with regard
 to comparative anatomy, how we imagine that the
 same things happen in human bodies in the same man-
 ner we observe them in other bodies. Eggs, when laid
 by the mother, if they contain young ones, want on-
 ly a fostering heat, whether the mother yields this by
 hatching them, or whether it be produced in any other
 manner, which is now very well known. Add to this,
 that a chicken has a rough beak, solid feet, and can
 move with great vigour considering its size; for as
 soon as ever it disengages itself from the egg-shell, it
 runs very swiftly. Man at his birth, by his cries, im-
 plores that assistance which he stands in need of; nor
 is he ever able to force the enclosures of the womb by
 his own strength. Can the obtuse figure of the fœ-
 tus’s head, and its bulk, form a proper instrument to
 dilate the orifice of the womb, which must be dilated
 before the head of the foetus can enter it? The efforts
 of the mother, and the powerful contraction of the
 womb, whilst they labour to dilate its orifice already
 begun, push the membranes full of humours into a
 place less capable of resisting. In this manner hu-
 mours are formed, which gradually dilate the mouth
 of the womb, the head of the foetus not having then
 entered the orifice of the womb. The membranes be-
 ing broken, the humours running out, the head of
 the foetus rolls into the orifice in natural delivery; but
 the foetus does not make its way by its own strength:
 strong efforts of the woman in labour follow; by these
 the delivery is completed: of these there would be
 little occasion, if the foetus could force its way into
 the world by its own endeavours. Harvey has attempt-
 ed

^a De generat. animal. p. 366, 367.

ted to confirm his opinion by observations. He relates the following event: "A woman in our country (it is a known fact) dying in the evening was left alone in her chamber: the next morning a child was found between her thighs, having made its way into the world by its own efforts ^b." I have not the least doubt of the truth of this observation, as we meet with facts of the like nature in other authors, and I myself have known such things happen; but I think it can by no means be concluded from this observation, that the infant made its way into the world by its own efforts. It is but too well known that the symptoms of death are extremely doubtful; nor is it at all improbable, that this poor wretch, being left for dead, revived again, and after having made another effort to bring forth, forced out the foetus, and, being destitute of assistance, perished.

But the womb itself, by its own contraction, might have forced out the foetus which seemed ripe for birth. De Graaf ^c has, in dissected rabbits, observed the womb to be agitated by a fluctuating and peristaltic motion, and by its own force to drive out the foetus. Though Harvey ascribes delivery to the strength of the foetus, he cannot deny that diseased and languid foetuses are sometimes forced out; and that they sometimes come into the world before their time; but he says in that case, "It is not so properly a delivery as an abortion, and that the foetus is rather thrown into the world than brought forth ^d." He however acknowledges, with his usual candour, that the womb even upon this occasion affords some assistance; and proves it by the example of a woman, whose uterus being fallen, hung down to her knees, surpassing a human head in bigness; and gaping asunder in its lowest part, poured out corruption and matter like an ulcer. He then adds what follows ^e: "Upon inspection (for I did not examine the part by my touch) I thought the womb was threatened with a cancer or a carcinoma; wherefore I proposed making a

C 2

"liga-

^b Ibid. p. 368.
generat. animal. p. 369.

^c De mulier. organ. p. 325.

^e Ibid. p. 370.

^d De

“ ligature and an abscission, and in the mean time
 “ took care to assuage her pain by lenient applica-
 “ tions. On the night following a child, the length
 “ of a span, completely formed, but dead, was for-
 “ ced out of the same tumour, and the next day was
 “ brought to me.” In this case it is evident, that the
 efforts of the mother could not act upon the pendant
 womb, and that the dead foetus could contribute no-
 thing to the delivery ; it should therefore be ascribed
 to the contraction of the womb alone. Therefore the
 womb, by its own force, contributed to the delivery ;
 and Harvey acknowledges^f, that we may observe, not
 in the human kind alone, “ but in other animals like-
 “ wise (as in dogs, sheep, and beasts of burden), that
 “ this struggle is not the action of the womb or the
 “ belly alone, but the effort of the whole body.”
 Thus he acknowledges the mother’s effort to be ano-
 ther cause of delivery ; yet he soon after^g ascribes a
 most difficult delivery of a robust child to the strength
 of the infant alone. For a woman, who, after a dif-
 ficult and laborious delivery, had the whole inside of
 the vagina torn and skinned ; when the sides of the
 vagina afterwards stuck together, “ so that neither
 “ the virile member nor a probe could enter it, nor
 “ the menses flow from it,” became pregnant ; and
 delivery drawing nigh, she was tormented in so dread-
 ful a manner, that she had laid aside all hopes of bring-
 ing forth, and bid her husband and friends farewell :
 “ When all on a sudden, by the effort of a very ro-
 “ bust foetus, that whole tract was broken, and an
 “ unexpected delivery was effected ; and a strong in-
 “ fant was born, the preserver both of its own and
 “ its mother’s life, who left a passage open to others
 “ that were to be born afterwards ; for, proper reme-
 “ dies being applied, the mother recovered her for-
 “ mer health.” Who can imagine, that so great an
 obstacle should be surmounted by the strength of the
 most robust foetus ? Is it not rather to be ascribed to
 the powerful efforts of the woman in labour ? From
 hence we learn the great influence of prejudice over
 men

^f Ibid. p. 366.^g Ibid. p. 368.

men of the greatest candour and ingenuity; men, as it were, born to investigate nature.

It may justly be inferred from what has been said, that weakness may be properly reckoned amongst the causes of difficult delivery; so that, as has been observed upon another occasion (§. 1291.) the Spartan virgins did very well to strengthen their bodies with violent exercise, that, being strong and vigorous when they conceived, they might be the better able to struggle with the pains of child-bearing. But even a Spartan matron might find delivery difficult, nay, sometimes even impossible, if the parts of generation were in a bad state, and would not yield a passage to the child.

§. 1312. **I**F the strength fails, it should be raised by uterine, cardiac, and sternutatory medicines.

Physicians should take great care not to hurt their patients by prescribing cordials: for it very rarely happens that the weakness of the woman in labour renders delivery difficult. I have often observed, that whilst the by-standers have thought the patient almost ready to faint through weakness, they have all been surprised at her strength when she made the last effort to be delivered of her burden. The woman in labour, and those that are with her, generally wish that delivery might be accelerated. But I before apprised the reader, that in women who lie in for the first time, and they are generally the most impatient, a speedy delivery is not the safest; that on the contrary a slow delivery is to be preferred, that the parts may yield by degrees, and may not immediately be violently distended. We should always be mindful of the prudent advice of Galen, (see §. 6.): “When you prescribe
“either a purging draught or a vomit, the administering it depends upon you, the consequences upon
“fortune.” For if at the time of delivery you should administer warm cordials too often or too copiously, to restore the lying in woman’s strength, or accelerate

rate delivery, these will continue to operate after delivery. But all physicians acknowledge that nothing is more advantageous at that juncture than composure of mind and body, and a gentle motion of the fluids; which will be accelerated after delivery, whilst the cordials which were copiously administered at the time of bringing forth still continue to stimulate. How prudently does the celebrated Boerhaave remind us of this, speaking of the virtues of oil of cinnamon! “But we have never seen any thing equal to cinnamon for restoring the strength of pregnant women, and women in labour, when there is no inflammation in the case, nor vessels broken nor wide open^a.” But it is very certain, that whilst the placenta is separated from the womb, the vessels are wide open, and copiously pour out blood. Whilst the genuine pains of delivery follow with intervals too short, the pulse becomes stronger and quicker, the face becomes tense and red, and heat is increased through the whole body. Let physicians judge then whether warm stimulating cordials can, in such a state of the body, be of any service? For though at the beginning of delivery the patient is not in such a state, she quickly will be so, and that in the most legitimate and natural delivery. In some places it is customary for midwives to carry little chests with them, filled with spirituous remedies, which they sometimes administer in large doses to women in labour, and the more freely the more unskilful they are: this has often given occasion to melancholy accidents. For if a delivery should be rendered difficult, not by languor, but by the unfavourable situation of the fœtus in the womb, or by the oblique position of the womb itself; the more the midwife increases the pains before these obstacles are removed by a change in the situation of the fœtus or the womb, the more she hurts the patient. For this reason, except the physician be very sure that the woman in labour is quite faint and languid, he should never administer cordials; and when he does, it should be in small doses frequently reiterated: yet midwives, the

women

women in labour, and those that are with them, are eager for cordials; and they are offered unknown to the physician, or even against his will. I have often been thus circumstanced; and I have always chosen rather to prescribe such cordials as I knew to be innocent, than obstinately to refuse any remedy of the kind. Distilled waters from “elder-flowers, from limes, roses, black “cherries with the kernels pounded, balm-gentle, the “bark of citron and orange-trees,” produce palatable and fragrant cordials, and yet do not increase heat and motion.

Women are never more domineering than at the time of delivery; they insult physicians as ignorant of what relates to their sex: every matron present has some peculiar remedy, which is said to have been for ages together used with success in the greatest families. To reason with people of this stamp would be lost labour. I found it better to shew myself easy, in suffering trifling, and even ridiculous remedies to be applied, so as they were neither dangerous, nor criminally superstitious. I never was against hanging charms, such as the lapis lyncis, the lapis aquilæ, &c. to the neck or thighs of the patient; nay, if they would but obey me in other things, I made no objection even to Helmontius's remedy, which is made of the gall and the liver of an eel dried and reduced to powder; provided it was not taken in wine, but in water or wine diluted with a great quantity of water: “This potion still remaining in the stomach, the os “pubis is opened as well as the valves of the os sacrum in the loins, and the fœtus is immediately “driven out. I have observed, that the stomach has “as it were a key to the womb^b.” He trifles afterwards, when he advances, that the liver of the eel or water-serpent opens the womb, because the woman was condemned to bear children in sorrow upon the serpent's account. Mauriceau^c shews more sense, when he rather advises to encourage the patient by speaking kindly to her, and to raise her depressed spirits

^b In capit. *Jus duumviratus*, p. 247. n^o 46.
malad. des femmes, liv. 2. chap. xx. p. 263.

^c *Traite de*

rits with broth, or a little wine and toasted bread.

We should likewise take notice, that lying-in women often languish, either because their labour lasts long, or, which is more frequent, on account of their dread of pain, and the doubtful event: whence in those that are weak, hysterical pain often follows; wherefore recourse should be had to uterine or antihysterical remedies. In such faintness and languor, it will be sufficient to dilute a few drops of tincture of amber or of castor in the distilled waters recommended above; and give it by spoonfuls, till the patient has recovered some ease.

If a great and sudden weakness should arise, especially if the pains at the same time cease, imminent danger is to be apprehended. “When the strength “fails on a sudden, a mortal extravasation is to be “dreaded^d,” whilst the blood either streams out of the womb, or is poured upon the abdomen, the uterus being broken; of which we shall treat hereafter. It is self-evident, that, in this unhappy situation, death is accelerated by warm cordials, as they increase the hæmorrhage.

It is customary to imitate by art whatever happens in the course of nature in diseases, if it proves beneficial to the patient; thus the doctrine of things beneficial and hurtful by nature is of great importance in physic. See what has been said upon this subject at §. 602.

Hippocrates has observed, *That to a woman troubled with a stoppage of the womb, or labouring with a difficulty of delivery, sternutation is beneficial^e.* It is universally known, that in sternutation the whole body suffers a concussion, almost all the muscles are agitated by a sudden convulsive motion, and all the bowels are shaken; whence hopes are conceived, that the pains of the woman in labour may be so increased, that delivery may be hastened.

We

^d Manningham. art. obstetric. compend. p. 15.

^e Mulieri uteri strangulatione vexatæ, aut partus difficultate laboranti, sternutatio superveniens bonum. Sect. vi. Aphor 35. Charter Tom. LX. p. 215.

We read of the happy effects of sternutation in a difficult delivery in Harvey^f: A young woman suffered so much in a difficult delivery, that she was seized with fainting fits, and became so stupefied and sleepy, that she could not be roused from her lethargy by all the various remedies that were administered: as she could swallow nothing down, he thrust a feather, daubed with a strong sternutatory, into her nose: and though she was stupefied to such a degree, that she neither sneezed nor awaked, she began to be agitated by a sudden convulsion of her whole body, which, beginning at the shoulders, passed at last to her lower parts. As often as this stimulating remedy was applied, delivery was promoted; and at length, whilst the mother continued oppressed with sleep, a healthy and vigorous child was born. He does not however inform us, whether the patient came afterwards to herself and recovered, or not.

It is obvious from hence, that, the nerves being irritated by a sharp sternutatory, the efforts to delivery were happily increased, though no sternutation followed. If the face of a woman in labour should be grim and red, her eyes swelled, and her head very much heated, it is natural to infer from these symptoms that she should lose a large quantity of blood before those violent concussions of sternutation can be safely attempted: for otherwise there would be reason to apprehend a bursting of the vessels of the head, and a mortal apoplexy. Hence Mauriceau^g, whilst he approves of administering sternutatories to women in labour when in convulsions, advises previous bleeding, lest a copious hæmorrhage should be followed by convulsions. Certain it is, that sobbing, which Hippocrates looks upon as a sort of convulsion, as it proceeds equally from repletion and inanition, may be cured by sternutation^h. This opinion is adopted by Galen in these words: *It is therefore a good symptom, because it shews that nature, which before lay torpid,*

^f De generat. animal. p. 366.

^g Liv. ii. chap. 28. p. 335.

^h Sect. vi. Aphor. 13. Charter. Tom. IX. p. 255.

*pid, is revived and restored, and recollects its former motions*¹.

§. 1313. **I**F the internal orifice of the uterus is too narrow, or too hard, it is to be helped as much as possible, by liniments and fomentations, to render it soft and smooth.

The impediments which have been observed in the parts of generation, when in a bad state, and to which a difficult delivery may be justly ascribed, come now to be considered.

The foetus sticks in the cavity of the womb, from which it should pass by its neck and orifice, that delivery may be effected. That neck of the womb is commonly called the *internal* neck, to distinguish it from the *vagina*, which is by some, but not very properly, called the *external* neck. Every body knows, that the form of a fig is ascribed to the uterus; the widest and highest part of which is called the bottom, the lowest and narrowest the neck. Eustachius^a has given us figures of a womb entire and of a womb dissected; but such as is the figure in women who are not with child: the hollow of the womb appears as it were triangular, wider in the upper part, and converging and growing narrower where the internal neck begins; which descending, is again dilated, to the mouth of the womb. But in the womb of a pregnant woman, the bottom is distended, and rises more gradually; but afterwards, the neck of the womb begins to be dilated in such a manner, that, about the third month of pregnancy, a fourth part of the top of the neck is as much distended as the bottom of the womb. In the fifth month, the bottom, increased in magnitude, occupies the middle space, which lies between the summit of the bones of the pubes and the navel; but at this time half the length of the neck is extended. In the seventh month, the bottom touches the navel;

¹ Signum itaque bonum est, quia indicat, naturam prius torpentem nunc excitari ac recreari, et propriarum motionum reminisci. *In Comment. ad Aphor. 35. Sect. vi. p. 215.*

^a Tabul. 13, 14.

vel; in the eighth month, the bottom takes up the space between the navel and the anticardium, or cavity of the breast above the place of the heart. In the ninth month, it almost touches the anticardium; and then the whole neck of the womb is distended^b. Then the neck of the womb disappears, as it were, making one cavity with the bottom, which contains the fœtus, now grown to maturity. If we consider the most exact figure of the womb of a woman, in the fifth month of her pregnancy^c, it is evident that the greatest part of the internal neck of the womb is as it were destroyed by distension: it is however to be remarked, that what remains of the neck appears shorter than it really is; because the orifice of the womb is rendered crooked before, that its inward surface may the better lie open to inspection^d. At least it appears from thence, that in the last period of pregnancy, when delivery approaches, there scarce remains any part of the neck, as the whole, being dilated, makes one cavity with the bottom. Hence it is, that at that time, in the summit of the vagina, no part of the neck is to be touched by the finger of the physician: the mouth of the womb alone meets it, and that too changed in a surprising manner. When pregnancy begins, it is found, upon touching, to be closed fast up, oblong, prominent, much like the snout of a dog just whelped; it afterwards grows thick, and is softened till about the sixth month: after which it begins to be diminished in all its dimensions, in proportion as the womb is more and more distended; so that when delivery approaches, the whole may be levelled, as though it were confounded with the globe of the swelling womb; then there remains only a little circular eminence. In some women, however, in the last months of pregnancy, the orifice of the womb is thicker, and moistened with slimy humours; but then it feels lax and soft, not firm and compact, as is usual in the first months of pregnancy^e. Therefore not only

^b Brudenell Exton. sect. iii. p. 117, 118.
 gravidæ, p. 205. ^d Ibid. p. 206.
 malad. &c. Tom. I. liv. i. chap. 7. p. 97.

^c Noortwyk de utero
^e Mauriceau traite de

only the womb, but its neck should be capable of yielding at the time of pregnancy, that the growing fœtus may find room enough; for if it should not, abortion is to be apprehended, as was said in the foregoing chapter concerning the diseases of women with child.

But the orifice of the womb ought likewise to give way and dilate easily at the time of delivery; and tho' it is found closed when pregnancy begins, it seems to be opened at last. In the womb of a woman five months gone with child, "the orifice gaped visibly, being
"greatly increased in size, wrinkled in its circuit, and
"filled with a sort of tenacious glue of an exceeding
"yellow colour, which, the womb being for the space
"of a year kept in a proper state, totally dissolved,
"and left an opening of the breadth of one's thumb
"in length and depth, of equal breadth every where,
"and capable of giving admittance to a writing pen
"in any part f."

In the external margin of the above mentioned orifice, there were pores extremely conspicuous, full of the same sort of glue, and little pellucid globes, sunk to a certain depth into the substance of the neck, and turgid with the same sort of matter.

There is therefore in these places every thing necessary to secretion, that the gaping orifice of the womb may be stopped up, and that the parts may be kept soft and slippery, so as to yield and be dilated with ease. But those little bags themselves, if in a diseased and vitiated state, may obstruct delivery: for in a woman who lay in for the first time, and who expired in the pangs of child-bed before she had driven out the fœtus, (see §. 486.) the neck of the matrix was found stopped up by a glandulous substance, which stuck to the womb, and "was bored here and there
"with small pores." It has sometimes been observed, that these slimy pits have been quite worn away in women exceeding fruitful. This rendered their latter deliveries extremely difficult and laborious.

It is however remarked, as has been taken notice
of

of above, that a few days before delivery there flows a slimy humour from the vagina, and that the parts of generation are constantly wet; so that the whole womb is lubricated, that the foetus, which is about to come into the world, may have an easy passage. Hippocrates, where he enumerates the advantages and disadvantages of those who dwell in cities situated in northern climates, informs us, that they must be of robust and dry constitutions, that they have strong and good heads, must be subject to acute inflammatory disorders, and more long-lived than other men; but as to the women of those countries, he observed, *That many of them are barren, on account of their fluids, which are rough, crude, and frigid; their monthly evacuations are not favourable, but scanty and vitiated. Add to this, that they are delivered with difficulty, and often miscarry, &c. corruption also often follows upon their delivery, and the parts also often suffer by being pulled and bursting in consequence of its violence^h.* For the hardness and dryness of the parts prevent easy delivery.

In another place, he recommends the following remedies for the removal of these defects: *If a woman during her labour should be dry and hard to be moistened, she should drink oil, and pour warm oil and water of malva upon the parts; she should also daub them with liquid ceratum, and with goose-grease infused with oilⁱ.* Things of this nature have been always applied, when there has been any reason to apprehend difficult delivery on account of dryness and want of flexibility in the parts of generation. Mauriceau^k judiciously advises not to apply these emollients at the time of delivery alone, but a long time before, that a proper degree of softness and lubricity may be acquired. Even

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^h Multæ steriles fiant propter aquas, quæ sunt duræ, crudæ, et frigidæ; purgationes enim menstruæ non contingunt idoneæ, sed paucæ et parvæ. Deinde difficile pariunt, atque valde abortiunt, &c. tales etiam frequenter a partu contingunt, præ violentia enim ruptiones et vulsuras habent. *De aere, locis, et aquis, Töm. VI. p. 191.*

ⁱ Si quæ in partu est sicca fuerit, ac ægre humectetur, oleum bibat, et locos oleo calido, et malvæ aqua, perfundat, et cerato liquido illinat, adipe etiam anserino cum oleo infuso. *De Mulier. Morb. lib. i. cap. 33. Charter. Tom. VII. p. 749.*

^k Traite des malad. des fem. gross. liv. 2. chap. 10. p. 262. liv. 1. chap. 27. p. 198.

in a legitimate and natural delivery, he advises midwives to anoint the parts of generation with emollient oil, the grease of an axle-tree, or fresh butter, if they observe them to dilate with difficulty^l. He has however added this caution^m, that recourse should not be had too often to these anointings at the time of delivery, lest the slimy humours which humect and lubricate the parts should be thereby rubbed off; for he judiciously observes, that these are of greater service than any application whatever. When I once apprehended difficult delivery in an old woman who lay in for the first time, I ordered her parts of generation to be twice every day exposed to a vaporous bath, and then anointed with fresh oil of almonds, with a decoction of the roots of marsh-mallows shaken a long time; for by so doing I obtained an emollient and lubricating unction, having followed the advice of Hippocrates. I had recourse to this method a fortnight before delivery, and that with success.

These are the remedies that may be safely applied: for it is dangerous to have recourse to force, to dilate the too narrow and refractory parts; for there generally follows a mortal inflammation of these parts, attended with an acute fever.

Add to this, that the parts which were before too narrow, are sometimes dilated, contrary to all expectation. I have often known midwives by the touch find the mouth of the womb hard and closed up, tho' some of the pains of delivery were come upon the patient; whereupon they left them, and went to others who seemed to have immediate occasion for their assistance. In less than an hour after, the orifice of the womb became soft and open, easily yielded, and a happy delivery followed, before the midwife could return to assist at it. La Motte was surpris'dⁿ that he could not draw a foetus, six months old, out by the feet, as he could noway get the hard orifice of the womb to yield. He in vain had recourse to oils and other fat unctuous applications. He went away, in order

^l Ibid. chap. 4. p. 239.
des Accouch. liv. 3. chap. 7. p. 291.

^m Ibid. chap. 7. p. 245.

ⁿ Traite

der to prepare a vaporous bath of emollient herbs : when he returned, he found the mouth of the womb soft, and so well disposed to yield, that he could draw out the foetus with the greatest ease imaginable ; and with such success, that six days after the patient walked the streets in good health, and took no notice of what had befallen her. He however candidly confesses, that he would have ascribed the relaxation of the mouth of the womb to the vaporous bath, if it had followed upon the patient's making use of it. It was, on the contrary, the work of nature alone. We meet with an extraordinary case of a woman with child^o, whose vagina was so tight that a writing pen could hardly enter it ; yet whilst the pangs of delivery grew upon her, the vagina was so much dilated in the space of three hours, that she was delivered of a strong robust child. It may be reasonably concluded from this instance, that we should not too easily despair even in the most difficult cases.

It would have been more prudent however to have given attention to the dilatation of the vagina at the time of pregnancy ; this subject shall be farther treated of in §. 1315. Nature often relieves herself ; but as this does not always happen, it is necessary to have recourse to the assistance of art.

§. 1314. **I**F a tumour formed either in the internal neck of the uterus, or in the vagina, should hinder the expulsion of the foetus, it is to be discussed, or suppurated, or removed by a surgical operation.

As natural birth is not to be brought about without a strong effort to the woman in labour, even when all the passages through which the infant is to pass are free from obstruction, it is self-evident that any tumour which grows about the mouth of the womb, or in the vagina, must obstruct the exclusion of the foetus ; wherefore the cure consists entirely in the removal of such a tumour. Various different obstacles to

delivery have been discovered, which shall now be treated of. It is generally known, that the womb is plac'd between the bladder and the rectum intestinum or last gut; wherefore whatever causes these parts plac'd with the womb in the pelvis to swell, must obstruct the easy exclusion of the fœtus. It was observed at §. 1301, where the inconveniencies arising from the growth of the fœtus are enumerated, that difficulty of evacuating by urine and stool are frequent in women with child. Wherefore excrements accumulated in the larger intestines, chiefly the rectum, as also the bladder distended with urine, have been reckoned amongst the obstacles of easy delivery^a. Therefore, towards the conclusion of the time of pregnancy, a gentle clyster should be given in case the patient should be costive. When first the pains of delivery begin, a clyster is highly serviceable, that the rectum intestinum may be thoroughly evacuated; for if this be deferred too long, till the head of the child descends lower, the rectum is then compress'd in such a manner that a clyster cannot easily be given, nor can the excrements easily come out. Clysters have another advantage; the pains of delivery are hastened by the efforts which the lying-in woman makes at stool^b. For the same reason women in labour are advis'd to make strong efforts to discharge their urine; though generally when stool is promoted by a clyster, urine is discharged at the same time. We have shewn at §. 1301, how a pregnant woman should be assist'd, when she discharges her urine with difficulty, or when it is totally suppress'd: where we have likewise treat'd of hemorrhoids, which sometimes give women in labour great trouble, and render the last efforts of delivery very painful; nay, even sometimes, by excessive anguish, render the patient unable to exert her whole strength in order to force out the fœtus.

But particular care should be taken lest the bladder should be distended with urine; for there is great danger, that the bladder may be so injured as that af-
ter

^a Mauriceau traite des malad. &c. liv. 2. chap. 10. p. 260.
chap. 4. p. 238.

^b Ibid.

terwards there may remain a troublesome involuntary discharge of urine: nay, it has sometimes been observed, that the bladder, being full of urine, has been broken by the violent efforts of a woman in labour; whence have arisen dreadful disorders, disorders which scarce admitted of a cure. After a very difficult delivery, the woman's urine ran from her when she walked upright, without any concurrence of her will, with a sense of burning heat and an ill smell. Upon a careful examination, it appeared, that the lower part of the bladder was broken towards the side, and that the lips of the broken place were covered with a sort of hard flesh. But as a portion of the urine had been collected in the cellular coat between the bladder and vagina, being made sharper by its stay there, it eat out the adjacent parts; whence an ulceration followed, and purulent urine was constantly discharged^c. Nay, though the bladder should not be burst, it may, if it should happen to be very full during the efforts to deliver, be so lengthened, where the adjacent parts make but little resistance, that a hernia or rupture of the womb may follow; a dangerous disorder, which has sometimes been observed in pregnant women, when, in the last month of their pregnancy, the head of the infant presses the bottom of the bladder, which is then on both sides distended as it were into the extremities, which end at the abdominal rings; and sometimes also the bladder, being stretched, descends between the vagina and the rectum, and in the perinæum, or seam between the privy parts and the fundament, causes a hernious tumour, which being compressed, goes off when the urine is evacuated, and returns when the urine is retained. We read of many such cases^d. It is obvious, that if a hernia of the bladder should advance between the vagina and the rectum, such a tumour by compressing the vagina might make its cavity narrow, as has been observed before.

^c Stalp. van der Wiel observat. &c. cent. 1. observ. 82. p. 351.

^d Acad. des sciences, l'an 1717, hist. p. 19. Academ. de chirurg. Tom. II. p. 23. et seq.

Ruyſch^e obſerved in a woman in labour a hard tumour, occaſioned by the violent efforts which ſhe made; it was not quite of the bigneſs of a man's fiſt, and was formed in the right ſide of the privy parts. He acknowledges that he at firſt had like to have been deceived, thinking it was a portion of the placenta, which ſometimes endeavours to come out before the foetus. " But having more carefully examined the
 " matter, he found that it was in reality a portion of
 " one of the womb's ſides: This was confirmed by
 " the event; for the foetus being diſengaged from
 " the womb, it immediately returned to its proper
 " place, and the patient recovered without the appli-
 " cation of any fomentation, which we uſe at deli-
 " very, leſt the fallen part of the womb ſhould be
 " ſeized with a gangrene." But it is eaſy to conceive, that if the orifice of the womb does not anſwer exactly to the cavity of the vagina (which ſubject we ſhall treat of hereafter), in ſuch a caſe the lower and lateral part of the womb may be extended into ſuch a tumour.

The falling of the vagina may likewise be conſidered as an obſtruction of delivery, and this happens much in the ſame manner with the falling of the rectum. For its inward coat, being become more lax, is inſenſibly inverted as it were above itſelf, and juts out beyond the privy parts in the form of a ſort of turgid ring unequally folded, in the middle of which there is an opening which eaſily admits the finger^f; with which the orifice of the womb may generally be touched, as it then uſually deſcends lower than uſual. Thus the falling of the vagina appears when it is recent: it is very different if the evil is of long ſtanding, the veſſels being ſtuffed up and very much ſpoiled; wherefore this diſorder has often been miſtaken by the unſkilful or inattentive for the falling of the womb. If the falling of the vagina be rightly treated at firſt, it is eaſily remedied, and the cure is completed by the
 re-

^e Obſervat. Anat.-Chir. obſ. 24. p. 23.
 Tom. III. p. 390.

^f Academ. de chirurg.

repose of a bed and astringent fomentations *. When it comes to be of a long standing, it is altogether incurable. If a falling of the vagina should happen before delivery, remedies should immediately be applied, lest, when the head of the foetus descends in delivery, the interior coat of the vagina should be pushed too far forward. Van Deventer^y advises, that if such an untoward accident should happen to a woman in labour, the midwife “should do her utmost to restore the
“ falling vagina to its place, and then likewise should
“ take particular care not to let the mouth of the
“ womb slip down too far, but keep it up in the va-
“ gina, and support it with her hands as well as she
“ can, till the woman in labour has disengaged her-
“ self both from the foetus and the placenta or secun-
“ dines.” He then directs that the fallen vagina should be restored to its place, and a proper remedy applied in order to its cure. At the same time, caution is required, lest other swellings of the parts of generation should be mistaken for the falling of the vagina^z: for after frequent and laborious deliveries, the vagina is so torn, that, having lost its strength, it is afterwards less capable of resisting the rectum swelled by gathered excrements, or the bladder filled with urine; and then there often appears in the vagina a tumour, which juts out beyond the lips of the pudendum. Thus I have seen a woman, who after she had been twelve times happily brought to bed, when she went to stool, voided her excrements before; for they distended her too lax vagina, and could not be forced out at the anus: wherefore, as soon as the hard excrements were to be forced out, she was obliged, by thrusting her finger in her privy parts, to keep them back till the anus could be opened.

Hence we may judge how much skill and prudence are required, and how perfect a knowledge of the parts is necessary, to render a physician serviceable to lying-in women.

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* La Motte traite des Accouch. liv. 3. chap. 11. p. 657. y Nov. lum. obstetric. cap. 30. p. 134, 135. z Acad. de chirug. Tom. III. p. 392, 393.

A delivery may be rendered laborious by the swelling of the lips of the privy members, though such swellings are not by the skilful looked upon as very dangerous, if they are cold and occasioned by white phlegm; upon which subject, see what has been said at §. 1301.

We have hitherto spoken of the swelling of the parts adjacent, by which the coming out of the mature foetus may be delayed. But tumours of every kind, like those which are observed in other parts of the body, may grow either in the orifice of the womb, or near it, or in the vagina itself. It is self-evident that all these obstacles ought to be removed before delivery is near at hand, if that can possibly be effected. Nay, it may happen, that the parts, long pressed by the foetus, may swell and be inflamed at the very time of bringing forth: and then a cooling prescription is necessary; and, above all, bleeding, that the vessels may be emptied. This is the advice of Hippocrates^a. *If a woman with child should be tardy in bringing forth, and should not be delivered with ease, but should be long tormented with the pangs of labour, especially if she should be young, of a florid constitution, and full of blood, she should be bled in the foot, and the loss of blood should be proportioned to her strength.* But if an inflammatory tumour, occasioned by any other cause, should at the time of pregnancy seize upon these parts, all the succour of art should be used in order to dispel it; and if that cannot be effected, suppuration should be promoted, that the passages may be rendered entirely free before delivery.

In these parts tumours have been often observed resembling little bags or polypuses, bearing a strong resemblance to the polypuses of the nose, and sometimes of such a magnitude, that they would render delivery impossible if not removed by the surgeon's hand.

A girl had for many years together a tumour in her
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^a Quod si prægnans diuturno tempore immoretur, et parere nequeat, sed pluribus diebus partus doloribus discrutietur, sit autem juvenis et ætate florens, multoque sanguine redundet, venas in malleolis secare oportet, et virium habita ratione sanguinem detrahare. *De Mulier. Morb. lib. i. cap. 77. Charter. Tom. VII. p. 776.*

vagina, which by some midwives was taken for a falling of the vagina, and which in process of time increased considerably. It happened, that, as she returned home one day, she felt a tumour prolapse from her pudenda with great violence and excessive pain; taking it to be the womb, she in a fright sent for Benevoli^b, who found a tumour ten fingers breadth in length, and about as much in circumference. That skilful surgeon soon perceived that it was not a falling down of the womb. He was however dubious what means he should use to cure so bad a disorder. He endeavoured to reduce the tumour to the vagina, but was not able: whence he concluded that the only remedy was to destroy it; and this the patient bravely required, that an end might be put to her sufferings. The neck to which the swelling of the vagina stuck, was of about twice the thickness of a man's thumb. Having called another skilful surgeon to his aid, he bound the neck of the tumour with a strong and thick cord to compress it powerfully, but without danger of a rent: as soon as ever the cord was pulled tight, he saw that the membranes were cut by it; wherefore he left off pulling it, watching whether a hæmorrhage would follow: seeing that did not happen, he boldly continued to pull the cord; and the whole tumour was separated from its cohesion with the vagina, nor did a very considerable hæmorrhage follow. As soon as a sufficient quantity of blood had flowed from it, he filled with strings of tow the cavity from which the tumour was separated, and dressed it properly. The tumour weighed twenty-two ounces, consisting of a slimy substance covered with a thin but strong membrane. In a few days the cure was completed, a decoction of barley being applied, with a mixture of honey and roses, wine and myrrh. He at the same time gives us to understand, that swellings of this nature might have misled those who are of opinion that the wombs of some women have been destroyed, and that they have been delivered notwithstanding.

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^b Dissertazioni, &c. obs. 6. p. 101, et seq.

Denys ^c removed a tumour of the same nature, but of smaller size, by making a ligature about the neck of the tumour: it grew in a virgin of twenty-two years of age, and was ulcerated before he undertook the cure; upon the fourth day after making the ligature, he cut off the tumour, which, being become putrid, diffused a very bad smell. A complete cure followed upon this occasion likewise. He with the same success, by a ligature, took off a hard fleshy tumour, which no where adhered to the vagina, but hung from the left side of the womb's mouth. It is certain that such tumours grow not only in the vagina, but in the womb itself; and that, being lengthened out, they pass through the orifice of the womb, and hang in the vagina. Such tumours often give rise to an obstinate hæmorrhage, which ceases after a ligature is made. Sometimes, being come out through the orifice of the womb, they are choked by it, and fall. The excellent Levret ^d deserves to be consulted upon this subject: he understood it perfectly, and invented very curious instruments, by the means of which the neck of such a tumour might be bound, whilst it sticks to some high place. Equally worthy of attention are the observations which the same author makes in another place ^e upon the polypuses of the womb and vagina. But as the instruments for binding the polypus, which he has given us a description of, would put the operator to some trouble, he has described another more simple ^f, which, by the means of a silver wire, can bind the neck of the polypous tumour in any manner that the surgeon thinks proper. Denys ^g made use of some such instrument to bind the tumour hanging from the orifice of the womb; but he used a wax thread instead of a silver wire, tho' the latter is much more convenient. But as the patient left town as soon as the ligature was applied, he charged her to bind it harder and harder, by twisting it till the

^c Over het Ampt der Vroedmeesters, &c. p. 10, 11. ^d Observ. sur les polyp. p. 99, et seq. et per totum. ^e Mem. de l'acad. de Chirurg. Tom. III. p. 518, et seq. ^f Mem. de l'acad. de Chirurg. Tom. III. p. 578. ^g Over het Ampt der Vroedmeesters, &c. p. 11.

the tumour fell; this advice was crowned with success.

Perhaps it might be thought that such tumours, especially if they have taken root in the womb itself, might obstruct conception. But a sufficient number of examples prove the contrary: We hear of many cases, and those very extraordinary^h, which evince that the due growth of the foetus is not always obstructed by such tumours, much less conception.

The track of those tumours which are found hanging from those parts, seems to be marked out by Hippocrates. Thus he expresses himself: *If there should be a bad smell in the pudenda, and a tumour should grow, and the pain of it should be severe, the seed of parsley will allay the pain, being administered in wine to the patient fasting; the bad smell will be dispelled by anniseed given in the same manner. But the tumour must be cut off*ⁱ. In a manuscript in the Vatican^k, there is a reading which seems preferable to the above; for there, instead of *κλων*, *Columella*, we read *καστορεος καστοριου*. Certain it is, that the castoreum of the shops may very properly be compared to such a tumour, both on account of its stink and its figure.

§. 1315. **I**F the excoriated lips of these parts should coalesce, they are without delay, and before delivery if possible, to be divided and cicatrized.

That delivery may be prosperous, the foetus should pass thro' the mouth of the womb, thro' the whole length of the vagina, and thro' the external orifice of the vagina; so that in each of these three places there may be an impediment.

Certain it is, that the excoriated and crude sides of these

^h *Academ. de Chirurg. Tom. III. p. 543, et seq.*

ⁱ Si in pudendis gravis odor sit, et columella innascatur, dolorque destineat, dolorem quidem sedabit apii semen ex vino jejuna datum, gravem autem odorem anisum eodem modo adhibitum. At columellam præcidere oportet. *De Natura Muliebri, cap. 66. Charter. Tom. VII. p. 715.*

^k *Ibid. p. 900. n° 197.*

these parts may grow together, from what cause soever this may proceed; nor is it impossible that the same thing may happen in the orifice of the womb. It has appeared from faithful observations, that women have conceived whilst the vagina was closed; it is not yet known whether a woman could conceive, the orifice of the womb itself being obstructed and stopped up. It is true indeed, the mouth of the womb may be closed after the woman is impregnated; which a physician may apprehend if venereal ulcers, or ulcers proceeding from any other cause, have eat into these parts; but it does not seem easy to form a judgment of this by the touch before delivery.

True it is, that, in women with child, the mouth of the womb, which was before pointed, fleshy, and solid, in the space of two or three months becomes level, thin, and soft, so that, two or three months before delivery, the mouth of the womb gapes open^a. But the same author, in the following page, with great good sense informs us, “ That all these particulars should be understood with some allowance, “ and as admitting of frequent exceptions.” For in women who are brought to bed for the first time, when they are robust and advanced in years, the mouth of the womb sometimes continues shut to the last, nor is it opened till the increasing pangs force it open. He observed, that the same thing happens when the situation of the child is disadvantageous.

Besides, it is observed^b, that pregnant women sometimes suffer pains, called by the widwives *spurious*, which wander up and down the abdomen; and do not, like the true pains, spring from the loins, and advance through the sides of the abdomen to the os pubis: whilst the woman who lies in suffers spurious pains, the mouth of the womb is contracted; for which reason an unskilful person might imagine that the orifice of the womb is going to be stopped up, especially as those spurious pains sometimes precede the

^a Daventer. nov. lum. obstetric. cap. 16. p. 55. ^b Ibid. cap. 17. p. 60.

the genuine pains, and sometimes accompany them. Moschion^c seems to have well distinguished these pains from the true pains : for after having with great judgment enumerated all the symptoms of approaching delivery, he observes, “ That a painful sense of heat is
“ felt in the orifice, together with a stoppage and
“ dryness;” whereas, by the true pains, the orifice is dilated and moistened. Whence it is evident, that great skill and prudence are required, in order to determine whether the mouth of the womb is really stopped up, as this but seldom happens, and perhaps never except after pregnancy. Inflammation, suppuration, and venereal injuries, may be reckoned among the causes of this disorder. But Hippocrates has observed^d, that burning ulcers sometimes infest the pudenda of women ; concerning these, see what has been said at §. 978.

Upon another occasion I made mention (§. 486.) of the case of a woman, the orifice of whose womb was stopped up ; in her fortieth year she was brought to bed for the first time ; and as the distance between the os sacrum and the bones of the pubes was too inconsiderable, she was with great difficulty delivered of a dead child, after having suffered severely for four days together. She recovered after this painful lying-in, and becoming pregnant again three months after, delivery came on at the proper time ; and though she for two days together suffered cruel pangs, the orifice of the womb never once gave way. A man-midwife who attended her, found, that the mouth of the womb was closed, and that there was not the least trace of an opening. In the first delivery, which had been so very difficult, the orifice of the womb had suffered great violence, and there followed a suppuration sufficiently considerable and lasting, which however the by-standers ascribed to the external parts, however torn. It seems highly probable, that the internal parts suppurated ; and that after suppuration, the orifice of the womb was stopped up, so that the woman

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^c Spach. gynæc. p. 4. n^o 45.
Charter. Tom. VII. p. 714.

^d De Natur. Mulieb. cap. 61.

remained susceptible of being impregnated, but unable to force out the foetus. The vagina being dilated by such instruments as offered, because proper ones could not be had, the scar of the stopped mouth of the womb appeared; and it was found necessary to force a penknife in, to the depth of half a thumb's breadth, in order to divide the closed mouth of the womb. The head of the foetus was touched by the finger; but the whole circuit was of a cartilaginous hardness, nor did it give way to the utmost efforts of the unhappy wretch: wherefore the whole circuit was divided by various incisions, and then began to dilate by degrees, but not sufficiently. Then the man-midwife was obliged to draw out the foetus with his hand, as he had done the time before.

Whilst the cartilaginous orifice of the womb was divided by so many incisions, a drop of blood did not flow from it; nor did the patient feel any pain, complaining of nothing but the uneasy dilatation of the vagina. As soon as she was put to bed after delivery, she was seized with a pleuritic pain, with a violent fever, and with difficult respiration; and having suffered so much that she was able to bear no longer, she died in twenty-four hours^c. This extraordinary case shews us, that after inflammation and suppuration, the mouth of the womb was closed with a hard cartilaginous scar; but that this injury did not appear plainly till the time of delivery. If there was any reason to apprehend such an accident, might not abortion be justly feared, as well as a dangerous hæmorrhage of the womb, whilst there is a necessity of dilating the vagina by force, of opening the closed mouth of the womb by cutting, and of afterwards preventing the parts divided by the penknife from joining each other again. It was observed before at §. 1306. that there is reason to fear abortion from slighter causes.

The reader may likewise have recourse to what has been said at §. 1290. of the stopping up of the womb by a membrane and other causes, when the monthly

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^c Medical essays and observations, Vol. III. n^o 19. p. 315, et seq.

evacuations are obstructed; but then it was likewise remarked that such women are barren.

It is easier to discover and to cure the growing together of the vagina, and the orifice of the pudenda; which subject was likewise treated of at §. 1290. where occurs the extraordinary case of a woman, who, being married in the sixteenth year of her age, had a vagina so narrow that a pen could hardly enter it; yet this woman became pregnant, after having been married eleven years; and in the fifth month of her pregnancy the vagina was so much dilated, that she was happily delivered. Mention was likewise made in the same place, of the several methods by which this disorder may be cured. If the membrane that incloses the vagina has to be cut, or the parts which are grown together ought to be separated, it is self-evident that this should be attempted before delivery, so that the cure may be completed before the woman is going to bring forth: for this being done too late, may give rise to ill consequences, as appears from the following observation.

When a woman who lay in for the first time was upon the point of bringing forth, the midwife upon examination found, that the vagina was very much straitened and close bound in the midst of its length. The surgeon being called, found that the midwife had spoke the truth; but with the end of his finger he touched a little hole, which Benevoli, being likewise called upon in this perplexing case, dilated with his finger, after which an instrument could be easily introduced to dilate it still more. The head of the foetus could then be touched; but there was a thin membrane there likewise, to which he fixed a hook, and in that manner removed it from the head of the child, pulling it whilst another cut it with a pair of scissars; but as the opening seemed still to be too small for the head of the foetus to pass through it, he put in his hand and widened it, and tore this membrane in such a manner, that the head of the foetus might be entirely uncovered: in three hours time she was delivered of a live girl. The lying-in woman was well

till the fifth day after her delivery; then there followed a fever with a violent cold fit; the abdomen swelled; there came on a vomiting, a copious sweating, and a severe pain of the vagina, together with a copious eruption of matter, purulent, slimy, and stained with blood: after several weeks the pain was in some measure diminished. The ulcerous vagina however could not be covered over with a scar in less than six months after. The cure was however happy and complete, and she was delivered several times after. When afterwards the mother of this woman was asked, whether her daughter had ever been troubled with a swelling, or any other disorder, in the parts of generation, she peremptorily denied it; at last she recollected, that when her daughter in her childhood rode upon a stick with other girls of the same age, she fell; and striking her privy parts against one of the knots of the stick, was so much hurt, that she was under the care of a surgeon for above a month afterwards: so that it seems probable that her illness derived its origin from thence. Certain it is, that if this had been known, the obstruction had been more safely removed before the time of delivery; for delivery following soon after, so hurts the torn vagina, that inflammation and suppuration cannot afterwards be avoided.

After a very laborious delivery, the vagina is often inflamed, and suppurates; nay, it is sometimes seized with a gangrene: if a cure should follow, the sides of the vagina may, if great care is not taken, grow together, or be so straitened by the hard and contracted scars, that it would prove a very difficult matter to dilate it at another delivery. We meet with many such cases in medical history ^f.

§. 1316. **I**F a too close union of the bones shall hinder the exclusion of the foetus, the neck of the uterus, and the vagina, are to be softened and lubricated with emollient liniments

^f *Peu pratique des accouch.* p. 245, et seq.

ments and fomentations; then the woman is to be assisted by the midwife, according to the rules of art.

Deliveries are rendered more difficult by this cause than any other; and as it scarce admits of a cure, it is not without reason that midwives are terrified by nothing so much as by a bad conformation of the bones that form the cavity of the pelvis.

The bones of the pelvis, though they are in girls just born composed of fifteen distinct bones, are in a riper age so united, that in a marriageable virgin the pelvis consists of only four bones, the os sacrum, the os coccygis, and two ossa innominata. Each of these last is by anatomists distinguished into three parts, which are known by different names: for the fore part of the os innominatum is called the os pubis, the superior and hindmost part is called the os ilium, the inferior and lateral part is called the os ischion.

These bones, joined together, form the cavity of the pelvis; and at that part which looks towards the cavity of the pelvis, they are smooth. The hindmost hollow of the pelvis forms the os sacrum, which above is broader, by degrees becomes narrower, and to its lowest and narrowest part is joined the os coccygis; the bones of the ilium form the superior and lateral part of the pelvis, the bones of the ischion the lateral and inferior part, and the bones of the pubes the fore-part. By the name *pelvis* therefore is understood that space which is comprehended by these four bones united together.

It is usual at the same time to consider the entrance into the cavity of the pelvis, and the passage that leads from it. The last vertebræ of the loins jutting out before in this place, together with the last part of the os sacrum, form the hind-part of the entrance. On both sides it is formed by the middle part of both bones of the ilium; the fore-part of the entrance is formed by the extremity of the bones of the pubes. The hindmost passage from the pelvis is formed by the os coccygis, on the side by the inferior border of each

bone of the ischium, and the fore-part is formed by the inferior curvature of the bones of the pubes.

Upon the perfect structure of the pelvis the happy delivery generally depends: for if the passage be too narrow, it is self-evident that the foetus cannot be forced through without great difficulty; nay, its exit is sometimes altogether impossible. But, which may at first appear extraordinary, even the too great breadth of the pelvis may do hurt, if the midwife does not take great care. For, that a delivery may be denominated happy, the foetus should, by the efforts of the mother, be forced through the orifice of the womb gradually dilated; and the womb ought to be so supported, that there may not be a possibility of its falling at the same time: for if the entrance of the pelvis should be too wide, the womb will descend with the foetus, the os uteri being hardly open, as it is not sufficiently stimulated by the pains of delivery, unless the womb is sustained by a proper narrowness in the pelvis. Deventer^a, taught by reiterated experience that such things happen, advises midwives to examine the size of the pelvis when they are sent for to women in labour, and not to be too confident, let appearances be ever so favourable, for a falling of the womb is to be apprehended. This mischief is prevented, if the womb, descending with the foetus, be held by the hands, lest it should hang out of the pudenda. Thus by art the womb is afforded that prop, which the too great size of the pelvis refused. Ruysch had seen cases of the like nature, and makes the following observations upon them: “ It is wonderful to tell what a strange
“ appearance the mouth of the womb makes at that
“ time; and how much caution there is need of in
“ such a delivery, is known to those who were with
“ us, and were in person witnesses of these cases. The
“ coming out of the foetus, when thus circumstanced,
“ should, I think, be left to nature, and the mouth
“ of the womb should be held with both hands^b.” Nor did he fear the falling of the womb alone; he was like-

^a Nov. lum. obstetric. cap. 27. p. 114.
Chirurg. p. 25.

^b Observat. Anatom.

likewise apprehensive of its inversion.

Levret^c has remarked, that when the entrance of the pelvis is of the larger size, the passage that leads from it is generally rather narrow; and that on the other hand, if the entrance of the pelvis is narrow, the passage that leads from it is broader than usual. In the first case, matters are conducted expeditiously at the beginning of delivery, but it is retarded towards the latter end: But then there is less reason to fear lest the womb should fall; and the midwife can assist the woman with child, by gently keeping in the os coccygis, which being crooked before, sustains the head of the child, and directs it forward towards the inferior curvature or border of the bones of the pubes, where there is a wider space to favour the coming out of the child. Now it is known, that the os coccygis can give way when it is in its natural state, as we are informed by Levret^d, where we meet with many curious observations concerning the structure of the cavity of the pelvis. But if the entrance of the pelvis incline to the narrow, the passage from it is generally somewhat large, and then delivery at first goes on but very slowly; but when the foetus goes beyond this narrow pass, it often comes out headlong, because the opening widens. It sometimes happens likewise, that the pelvis is too wide, not only in its entrance and the passage out of it, but in its whole extent; and then the whole womb, together with the mature foetus contained in it, might roll from the pudenda, if not prevented by a skilful hand^e. Hence it appears, that the too great magnitude of the pelvis may have bad consequences; but the midwife's art is at hand to obviate them. The difficulty is much greater if the pelvis should happen to be too narrow; which sometimes renders delivery absolutely impossible. It is true indeed, the too great magnitude of the foetus may render delivery difficult, nay impossible; but we are at present treating of deliveries difficult on account of some defect in the mother.

The sign of the pelvis's being so narrow, that the

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^c L'art des accouch. p. 7.

^d Ibid. p. 6.

^e Ibid. p. 7, 8.

mature foetus cannot pass through it, is^f its not being able to admit the man-midwife's hand, let it be ever so little. It is universally known, that there is a great difference between the hands of different men, with regard to their different size and fleshiness. Those are allowed to be of all others best calculated for the man-midwife's office, who, with strong muscles, have narrow hands and long fingers: if therefore the pelvis is unable to admit such a hand, the birth of the mature foetus is looked upon as impossible, and the only remedy left is the Cæsarean Operation, which shall be treated of hereafter.

The bones of the pelvis are obnoxious to all the same diseases, to which the other bones of the body are liable; insomuch that the exostoses, or juttings of the bones out of their proper places, which happen here, may make the cavity of the pelvis narrow^g. It has even been observed, that the extremity of the thigh being moved out of the pan of its joint into the foramen ovale, has rendered delivery impossible till it has been replaced. It is known to a certainty, that the last vertebræ of the loins jutting out too far inwardly, have totally prevented delivery, though the structure of the pelvis was unexceptionable.

Now as the rickets alter and discompose so many bones of the body, all who have written upon the art of midwifery agree, that difficult delivery is to be apprehended in those who have been troubled with that disorder when young: for such as have suffered it have often a hump-back, a distorted back-bone, or a lameness, during the remainder of their lives. An excellent author^h has admirably described these disorders; and has remarked, that the structure of the pelvis is not always vitious, though the back-bone should be distorted. For if the distortion of the back-bone should not be occasioned by rickets in childhood, but should happen later, in the twelfth or fourteenth year, and proceed from some other cause, the pelvis is then completely formed, and its structure may be good

^f Ibid. p. 9. ^g Crantz de utero rupto, p. 28.
Exton. of midwifery, sect. iv. p. 82.

^h Brudenell

good, though the rest of the body should be rendered deformed by the back-bone's being distorted. Perhaps these are the cases in which midwives are surprised that deformed women are not delivered with more difficulty than others whose shape is unexceptionable. It is however to be remarked, that let the pelvis be ever so well conditioned, if the distortion of the back-bone should render the cavity of the breast narrow, hump-backed women bring forth with more difficulty than others; because, on account of difficulty of breathing, they cannot exert themselves in strong efforts to promote delivery.

But as the bones in rickety children are soft and flexible, and they are unable to walk like children in health, they remain for ever in a chair, or sitting in their nurse's lap: whence the fore-part of the coccyx is pressed towards the cavity of the pelvis; the inferior extremity of the os sacrum juts out; the highest part of the same bone, with the last vertebra of the loins, comes out before, and approaches the summit of the os pubis; so that in some women the distance between the os sacrum and outermost border of the bones of the pubes has been found not to exceed thrice a thumb's breadth in extent, in some not twice the breadth of the thumb, in some (tho' seldom) not one breadth and a half. In others, on account of the same disorder, the last vertebra of the loins, with the last part of the os sacrum, points inwardly, but towards the side; the bones of the pubes, which should have outwardly a convex, inwardly a concave surface, are levelled, nay, they sometimes become convex towards the innermost parts: moreover, the lower part of each bone of the ischium declines towards the cavity of the pelvis, and the distance between the extremities of these bones, which is generally equal to three breadths of a thumb and a quarter, is diminished. But the commonest defect proceeding from this cause, is a protuberance of the last vertebra of the loins and the summit of the os sacrum, which causes the head of the fœtus often to stop motionless in the entrance of the pelvis on account of its deformity. The fear of
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difficult delivery is the greater in those who have been troubled with the rickets in their childhood; because though they are cured, and though their shape becomes unexceptionable, there still remains some deformity about the pelvis. It is for this reason that the most experienced midwives always dread a difficult delivery in such a case.

If therefore the close connection of the bones prevent the coming out of the foetus, it may be reasonably inquired what assistance is in such a case afforded by art. The softest unctions, fomentations, and vapours, are here recommended: all these are of service, especially if the parts should be too hard and dry, as was observed at §. 1313. but there is little room to hope that the bones will by these means quickly soften and give way: in the mean time, however, they may be safely tried.

But as the bones which form the cavity of the pelvis have for a long time stuck together, by means of the intervening cartilages, which begin to ossify as age ripens, those skilled in midwifery have made it a question, whether these bones can separate at the time of delivery, so as to increase the cavity of the pelvis. Eustachiusⁱ has taken notice of a thick gristle, that connects the bones of the pubes. The same juncture of the bones of the pubes is externally covered with a considerable number of ligamentous and aponeurotic fibres, which are very strong; in like manner the junctures of the os sacrum, with the bones of the ilium, are every where covered with different planes of aponeurotic fibres; which are very dense, and extremely elastic^k. Hence it appears, that the parts in this place are so organized, as to yield upon any occasion; but that they can by their elasticity restore themselves to their first position, as soon as the force that acted upon them is removed.

It is universally allowed, that the os coccygis can give way; and if it was not able to retire backwards, whilst the head of the child sticks in the passage out of the pelvis, it is evident that the delivery must prove

very

ⁱ Tabul. 43.

^k Levret l'art des accouch. p. 3.

very difficult. But Mauriceau¹ denies that the bones of the pubes can be disjoined, because at the Hotel Dieu, a great hospital at Paris, he had seen women immediately after delivery walk to their bed, which was at a considerable distance from them; which they would be unable to do, if the bones of the pubes were separated from each other, or if the bones of the ilium were separated from the os sacrum. He adds, that having inspected the dissected bodies of many lying-in women, he never saw such a separation of the bones. It seems probable, that in a natural and tolerable easy delivery, though the juncture of the bones of the pelvis may in some measure yield, a complete separation of these bones is not made. But it cannot at any rate be denied, that in a difficult delivery the bones of the pelvis are separated from each other. This has been attested by the most eminent professors of midwifery; they found the above-mentioned ligaments soft and dilated, and the bones themselves separated. Riolanus demonstrated this to three hundred auditors, on the body of a woman who had been hanged four days after she was brought to bed. Diemberbroeck found the bones of the pubes separated the length of the little finger, the very next day after delivery. Paræus, Bauhinus, Harvey, Spigelius, have seen things of the same nature. All these testimonies may be found in one collection^m. I myself have seen in an illustrious personage, who died in the eleventh week after a very difficult delivery, the bones of the pubes separated in such a manner, that they could move upon each other with a sort of a crackling. I am not therefore surprised, that a person of great eminence in the art of midwiferyⁿ, being taught both by his own observation, and the dissection of many bodies, should lay it down as a rule, that a mutual separation of the bones of the pubes happens in difficult deliveries oftener than is thought. Cornelius a Solingen^o found the bones of the pubes separated from each other

¹ Liv. ii. chap. 1. p. 210.^m Bonet. sepulch. Anat. Tom. III.

p. 117,—119.

ⁿ Levret l'art des accouch. p. 3.^o Stalp.

van der Wiel, obs. 66. p. 284, et seq.

ther about the distance of a finger's breadth, and the cartilage by which they are joined softened. In him we likewise meet with many observations, collected from a variety of different authors, which prove, that, in a difficult delivery, the bones of the pubes, and other bones which form the pelvis, are mutually separated from each other, the teguments being softened and rendered more tumid; which is highly worthy of observation^p. We certainly observe, that, before delivery, the internal membrane of the vagina becomes tumid, soft, moist, and that the lips of the privy members swell insensibly. The mouth of the womb, which before was found, upon touching, to be firm and solid, is rendered soft and dilated before the pains of delivery come on. Does such a humid softness grow, before delivery, in the ligaments which connect the bones of the pelvis, that they may be afterwards able to yield when there is occasion in a difficult delivery? and do the separated bones, when once the foetus is driven out, return to their former union, by means of their elastic ligaments? This seems to be probable enough. I have often known women after a difficult delivery complain of a pain at the juncture of the bones of the pubes, and they have been quite unable to sit up in bed on the first days of their lying-in. These pains however ceased by degrees, and they recovered, though but slowly.

But if in a too narrow pelvis so great a force is required to drive out the foetus, that the bones themselves are disjoined, it follows that the head of the foetus must suffer great violence whilst it is forced through such narrow passages. For this reason children are so often still-born, when the delivery is difficult; but if they come out alive, their heads are lengthened, and of an unusual shape. This skilful midwives endeavour, by a gentle and equable pressure of the hands, to reduce to a proper figure. It is generally known, that the skull of a new-born child is not altogether bony, but partly membranous; so that the bones

^p Confer et *Peu pratiq. des accouch. liv. i. chap. 12. sect. 12. p. 185. Denys Vernandelingen, &c. p. 114, 115.*

bones can mutually approach each other, and thus the spheroidal figure of the head may be changed into an oblong figure, that it may the easier pass through a too narrow pelvis.

Nor is less violence done to the womb, whilst it makes an effort to force the foetus through a narrow pelvis; for it does not admit of a doubt that the womb, by its contraction, acts in such a manner as to promote delivery. About the middle of last age, Hemsterhuys observed, “ That the womb of a pregnant bitch, the “ abdomen being open, by its own effort only, forced out the foetus, the diaphragma and muscles of “ the abdomen remaining idle and yielding no assistance ^q.” This is confirmed by experiments still more recent. Caldani ^r, a celebrated physician of Bologna, saw in a pregnant bitch, upon the point of being delivered, the womb strongly agitated. He at first thought that this motion was occasioned by the ordure in the womb. He cut the womb, and drew out three living foetuses, and two dead ones almost totally rotten: the womb thus evacuated, was so contracted by its own force, that there remained nothing of its cavity. The womb continued to move for upwards of the space of an hour; then the motion began to subside: the slightest stimulation increased it so much, that, a candle being brought near it, it was contracted in such a manner that its whole cavity was destroyed. The same experiments have been since tried upon the wombs of two cows not pregnant, both whilst the uterus remained in the body, and when it was taken out.

But there are many reasons to think that the uterus of a human creature has the same force. When the pains of delivery are at hand, the skilful midwife, touching the orifice of the womb, perceives this, tho’ the lying-in woman feels no pain; nay, as has been observed in the foregoing chapter, by properly irritating the womb, they excite it to drive its contents out of the cavity. After the mother has been dead,

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^q Messis aurea exhibens anatom. p. 333.
Minutissimo, &c. Haller, p. 320.

^r Lettera scritta al

the uterus has by its own force driven out the foetus; in one that is alive it often dissolves the placenta which is left after the child, and drives it out when dissolved; it also throws out clotted blood that fills the cavity, and, from its great distension in women with child, returns to its former size. Men-midwives have often perceived, upon putting their hands into the womb, that they were strongly compressed. Ruysch discovered the muscular substance in the womb's fabric; this has been confirmed by others; upon which subject the reader may have recourse to the observations made in the description of the womb of a pregnant woman *. All these circumstances concur to prove a strong contraction of the womb in delivery.

Ruysch seems to have been so certain of the strong contraction of the womb (long before he had discovered those muscular fibres), that he was of opinion, that the orifice of the womb being first shut, or the head of the foetus stopping it up, the humours contained in the womb might, by the Fallopian tubes, be forced into the cavity of the abdomen and into the pelvis †. Nay, which is still more extraordinary, the womb, in a delivery of the most difficult kind, seems, by transpiring as it were, to have forced blood out of its own substance into the cavity of the abdomen; and it was after death found there clotted. A woman died by the difficulty of delivery, without forcing out the foetus: in the corpse, the whole anterior surface of the womb was found covered with clotted blood, which could by no means be separated from it; and being spread out upon a table, it had the appearance of a cake of coagulated blood, of the length of fifteen inches, a foot broad, and three lines in thickness. Upon an accurate examination, no vessel was found broken, nor did a drop of blood appear in the rest of the cavity of the abdomen ‡; so that it seems probable that that blood was forced out of the very sub-

* Noortwyck de utero gravido, p. 106, et seq.
Anat. Chirurg. n° 84, 85. p. 79, 80.

† Observat.

‡ Medical essays and observations, Vol. IV. p. 447.

substance of the womb in transpiration, by the violent efforts of the poor sufferer. Nor is it improbable that this is frequently the case in very difficult deliveries; so that the worst consequences might, after delivery, arise from this corrupt extravasated blood being melted and wasting the viscera of the abdomen: for it seems scarce credible that such a quantity of clotted blood collected in the cavity of the abdomen could be carried back again.

Whilst therefore the womb is compressed with such force, and is in a difficult delivery forced by the strong efforts of the woman in labour against the foetus contained in its cavity, there is room to fear a bursting of the womb itself, by which the foetus either entirely or in part rolls into the abdomen of the mother, which generally proves fatal. Gregoire, formerly a celebrated professor of midwifery at Paris, informs us, that in the space of thirty years he saw sixty burstings of the womb; amongst these he once perceived, that, the womb being broken at the side of the placenta, the foetus with its feet touched the diaphragm of its mother. In another case he takes notice of the head of the child, and the whole right side, being without the womb, the other parts remaining in its cavity; so that the foetus rid, as it were, upon the womb with straddling legs^v. We meet with many examples of burst wombs in La Motte^w and others. That was a particularly remarkable case, when the legs of the foetus had pierced through the placenta and the womb. La Motte however drew it out by the feet. As soon as the placenta was separated, he again plunged his hand into the womb; it penetrated through the hole in the womb into the abdomen, and could easily touch the intestines: yet the poor wretch lived three whole days. In another case of the same nature, the lying-in woman lived four days; and in the corpse there was nothing found but the appearance of a bursting of the womb, which was just big enough to admit the tip of the little finger, the womb being then contracted.

^v Acad. des Sciences, l'an 1724. Hist. p. 52. Heister's Waarnamingen 944.

^w Traite des accouch. liv. 4. chap. 5. p. 463.

We meet with an extraordinary case of a burst uterus ^x, where the whole fœtus stuck in the cavity of the abdomen, except the extremity of one foot and the navel-string: yet it was happily taken out by the feet; and after the separation of the placenta, the operator thrusting in his hand, brought the clotted blood out of the cavity of the abdomen. This woman lived eight days. In the corpse of a woman who had borne the pangs of delivery three days together, and perished without forcing out the fœtus, the celebrated Alexander Monro found a cleft of the uterus through which the fœtus ripe for birth fell, with the placenta, into the cavity of the abdomen, which contained a great quantity of blood ^y.

We read, that not only the cleft uterus, but the abdomen itself, has been known to make a very loud crackling noise in a difficult delivery; and that the fœtus has come out through this aperture, the placenta been drawn away, and the viscera of the abdomen seen by the bystanders. Yet the lying-in woman was perfectly cured by the simple application of butter, with a mixture of white sugar: the scars left as it were the resemblance of a healed wound behind it, as if the skin had been scratched with a blunt needle. This surprising case would be hardly worthy of credit, if eye-witnesses had not made affidavit of the truth of it before a magistrate, and the midwife and another woman who drew out the placenta been amongst the witnesses. These testimonies, which have the sanction of public authority, are preserved by the secretaries of the Edinburgh society.

It is therefore certain, that the uterus is sometimes burst in a difficult delivery. Now it is worthy of consideration, whether the symptoms by which a bursting of the uterus can be foreknown, are discoverable; or whether there are diagnostic symptoms which shew the uterus to be already burst? In fine, we should inquire whether any aid can be hoped for from art in so great a calamity.

What-

^x *Peu pratique des accouch. lib. i. chap. 8. p. 79, et seq.* ^y *Essays and observations physical and literary, Vol. II. art. 24. p. 339.*

Whatever obstructs the coming out of the foetus, may be reckoned amongst the causes of a burst uterus; yet the uterus is not broken always, even in the most difficult deliveries: nay, this is known to happen but rarely^z. But as all the bodies of women who die in child-bed are not opened, there seems to be just reason to suspect that the uterus has been burst in some of them, though we cannot be certain of this, especially if they have made great, but vain efforts, to be delivered.

The immediate cause of a burst uterus, besides external force, is assigned by Levret^a, to be frequently the kicking of the foetus whilst, confined in too narrow a pelvis, the head sticks; but especially when the child is convulsed, which often happens when it is at the point of death: if the womb should then be at once urged by its own force, and the efforts of the mother, bursting is very much to be feared. Add to this, that the force of the muscles is excessively increased by convulsive motions, as has been remarked in the history of the Epilepsy.

It is demonstrated by observations of the most judicious authors, that the uterus has been broke in all its parts; these have been collected by the celebrated Crantz^b, who wrote an admirable treatise *de rupto utero*. The symptoms which precede a rupture of the uterus are as follows^c: The foetus, after having for some time continued motionless, is agitated by sudden motions, which make the mother feel acute pains in that part of the matrix which is threatened with a rupture; but the pain has its chief seat about the middle of the fore part of the lowermost belly or epigastric region. These joltings return periodically, the intermediate space of time not being limited; the last, but most violent agitation, which denounces the death of the foetus, comes at length; afterwards these motions cease. For, generally speaking, the foetus dies in convulsions. To these symptoms, Crantz adds the following: “ A vast and distended abdomen, the vagina

F 3

“ push-

^z Crantz de utero rupto, p. 12. ^a L'art des accouch. sect. 595. p. 79.

^b In loco modo citato et seq. ^c Levret, ibid. sect. 597, 598. p. 98.

“ pushed back, the orifice high, pains true but vio-
 “ lent, recurring frequently without considerable in-
 “ tervals, tormenting the patient without promoting
 “ delivery, come upon her at the very beginning, or
 “ in the midst of the time of the natural effort. The
 “ humours having gushed out, the pains grow more
 “ violent; causing unintermitted anguish, and pro-
 “ tracting the patient’s sufferings without affording
 “ any hopes of delivery, they make the woman in la-
 “ bour feel such misery, that the ignorant vulgar are
 “ surpris’d at her not being delivered, &c. till the
 “ fœtus, rais’d up by a violent leap, pierces the con-
 “ tracted womb with a kick, or tears it with some part
 “ of its body ^d.” In the notes he afterwards canvasses
 the question, Whether the uterus is broken whilst
 the waters remain collect’d, or afterwards when they
 have flow’d from it, the membranes being broken;
 and having consider’d all that can be alledg’d on ei-
 ther side, he concludes, “ That nothing can be deter-
 “ mined with certainty upon this subject: however,
 “ according to the most exact observations hitherto
 “ made, the womb is generally burst after the humours
 “ have run out ^e.”

If the symptoms just mentioned have place, there
 is great reason to apprehend a rupture of the uterus;
 if those are succeeded by the following, it is plain that
 the uterus is already burst ^f. If, for example, a faint-
 ing fit or great weakness should follow, the mind be-
 ing unhurt; if the face should become pale; if the
 pulse should grow weak; if the abdomen should swell
 with a big smooth tumour, with a sense of unusual
 but not disagreeable warmth; if the extremities should
 be cold; and if drops of cold clammy sweat should
 be seen on the face; the patient does not hold out
 long, but generally dies in convulsions. Sometimes,
 whilst the uterus bursts, the bystanders hear the noise
 of a concussion, and, after a fainting fit, the patient
 seems to recover; the motion of the fœtus is seldom
 or ever felt afterwards; the pains of delivery are at an
 end;

^d De rupto utero, p. 15, 16, et seq. ^e Ibid. p. 17, 18. ^f Ibid.
 p. 19, et seq. Levret art des accouch. sect. 599. p. 98.

end; the limbs of the foetus, which could before be touched in the mouth of the womb, are no longer felt; that is, if either the whole foetus, or the greatest part of it, sticks in the cavity of the abdomen; but then, by touching the abdomen, the parts of the foetus may be more easily distinguished by the touch than they could be before whilst they still stuck in the cavity of the uterus.

It has been justly remarked ^g, that this series of symptoms does not always take place: for some women, without any appearance of the womb's being burst, die in a few hours; whilst others, as appears from the above cited observations, live for several days; in whom there should, or at least might be various different symptoms, according as the foetus which remains in the abdomen presses or irritates the viscera. Nor does the foetus always pass into the abdomen upon a rupture of the uterus: for in an easy and natural birth, the foetus has been known to come out without the assistance of the midwife, the placenta immediately following it. The mother having died upon the same day, her body has been opened, and a rupture of the womb discovered ^h.

But we conclude that the foetus sticks in the abdomen, the womb being broken, if the part which was before touched in the orifice of the womb be no longer felt; if pure blood flows thro' the privities, or if congealed blood drops from them; if the orifice of the womb, as generally happens after delivery, seems inclined to close; and if the womb be fallen down ⁱ. But the symptoms opposite to these, indicate that either the whole foetus, or a part of it, is still contained in the cavity of the uterus.

But as many of the symptoms of a burst uterus are taken from the discharge of blood which runs into the cavity of the abdomen, the same might follow from any other hæmorrhage, though the blood should not gather in the abdomen. If the blood flows through the orifice of the womb and the vagina, the cause is
evi-

^g Crantz de utero rupto, p. 22.
de utero rupto, p. 39.

^h Ibid. in notis.

ⁱ Crantz

evident: but if the navel-string should be broke, the membranes being still entire; or if, the membranes being broken, and the head of the foetus stopping up and filling the mouth of the womb, the same thing should happen; the cavity of the womb will be filled with blood; the foetus, being convulsed through inanition, will strike the womb; the woman in labour will be weakened, and grow pale; and many symptoms will concur, which will pass for signs that the womb is either already burst, or upon the point of bursting. But this cause of an internal hæmorrhage has seldom occurred. La Motte informs us, that it never fell under his observation more than once, as was observed in §. 1304; however, instances of it have been known. We meet with another case amongst the observations of Levret cited by Crantz^k, where the navel-string was broke amidst the pains of delivery; and, after going several times round the neck of the foetus, suffocated it. But as the belly swelled more and more, chiefly in the epigastric region, and at the same time seemed hard to the touch, Levret apprehended that there was an internal hæmorrhage in the case, rather than a rupture of the uterus; as, after the latter, the abdomen is filled with blood, whilst the tumour appears smooth and soft; by which symptom a rupture of the womb is distinguished from an internal hæmorrhage which fills the whole uterus with blood. Thus, though in this case “the true” and certain bordered upon the doubtful and the “false,” it was easy for one who was a perfect master in his profession, to discover the true diagnostic symptoms. For as the head of the foetus almost filled the whole vagina, and yet was not moved forward by the great and frequent pangs sustained for four hours by the woman in labour, there was room for a suspicion that the navel-string, having got about the neck or some of the limbs of the foetus, retarded delivery; and on that account, there was reason to apprehend that the placenta, to which the string is fastened, should be separated from the womb, and an hæmorrhage

rhage should follow, as is often the case. Nor was he any way in fault in not foreseeing the breaking of the navel-string; as that but seldom happens, and the physician cannot possibly have any knowledge of it as long as the foetus fills the orifice of the womb with its head. He distinguished the internal hæmorrhage of the uterus, from that which follows upon a rupture of the womb, and pours blood into the cavity of the abdomen; and from this knowledge, he determined what succour should be given to the lying-in woman.

It remains for us to consider in what manner women in labour should be assisted, when the difficulty of delivery proceeds from the close joining of the bones of the pelvis, which obstructs the passage of the foetus.

The excellent Deventer¹ advises midwives, if they find by the touch that the pelvis is narrow, not to press their patients to make great efforts whilst they feel the pains of labour: there is no haste necessary upon this occasion; the chief hope is, that the head of the child will be insensibly lengthened by a slow and gentle effort, and so may be made capable of passing through these straits. For this reason, no medicines should be given, nor any art used, to increase the violence or the frequency of the pains, though this is often eagerly desired both by the woman in labour and the by-standers. It was before observed, that the bones of the pelvis consist of several different bones, which seem to have a power of mutually receding from each other, in order to make room for the foetus to pass; they are bound together by intervening cartilages and ligaments; these have been observed to swell, soften, and grow flexible, whilst delivery approaches, that they might be the better able to yield; but these things should happen gradually, and therefore a slow delivery is thought the best in women who are brought to bed for the first time. Women in labour should be placed in the most convenient position, whether in a bed or a chair, so that the os coccygis may be able to yield freely, and may not be pressed by the weight of the

¹ Nov. lum. obstetric. cap. 27. p. 115.

the body or the clothes. Nay, when the head of the foetus sticks in the passage out of the pelvis, the author advises midwives equally to press back the os coccygis with the back of the hand, and so to make room for the foetus which is coming out ^m.

But if the head of the child should stay in the cavity of the pelvis, and yet cannot be forced through on account of the narrowness of the passage, though the os coccygis should be forced back, then there is occasion for other assistance: different persons have recommended different remedies, but not all equally safe. Many have advised, that, whilst the head is not quite fixed and immoveable in the cavity of the pelvis, the midwife should push the head of the foetus backwards, and pull it out by the feet. But if the head should stick to the pelvis, and it should be a difficult matter to get it out, then the situation of the child cannot be changed, nor the head pressed back. This is a melancholy case, of which many sad examples have occurred: if the child sticks long in these narrow passes, it dies; and being seized with convulsions before death, it sometimes bursts the womb of the mother by its violent kicking, as has been said before. If the child should die, the head grows so soft after a time, that it can be forced out of the womb by a powerful effort. But this generally happens too late, as that strong compression of the soft parts frequently gives rise to a gangrene fatal to the mother; or if she should escape, the cure is very troublesome, and often leaves very bad consequences behind it, the adjacent parts, the vagina, the rectum, and the urethra, being ravaged by the gangrene. Such examples are to be met with in every author.

Hence recourse has been had to cruel operations, surgeons endeavouring to draw the foetus out with hooks. True it is, that there is no necessity for sparing the dead child; but it will appear in the sequel, that we cannot be always certain of the foetus's being dead in the mother's womb. There have been shocking examples of torn foetuses pulled out by force,

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transpierced with hooks, that have shewn themselves to be alive by their lamentable screams. Sometimes the hooks, badly fixed, or having dropt from the torn parts of the foetus, whilst it was dragging out, have torn the unhappy woman in labour, especially if this was attempted when the foetus had been dead for a time and half rotten. For this reason, prudent surgeons avoid these operations altogether, or have recourse to them but very rarely. The excellent treatise of the celebrated Crantz, upon the instruments of midwifery, is worth consulting with regard to these particulars: in it, all these matters are accurately treated of; and we at the same time meet with a horrid case of a man-midwifeⁿ, who fixed a hook to the head of a foetus, tore out the brain, and in about an hour's time dragged out the child, excessively hurt, but still alive, and by its loud cries as it were upbraiding him with cruelty. And thinking this villany too little, he pressed the child to death, by putting his foot upon its neck. Such barbarity should have been punished by the hand of the common hangman.

In this difficult case, men eminent in the art of midwifery have exerted themselves to the utmost to disengage the mother without hurting the foetus, and to preserve the latter if possible. The head being wedged in the pelvis, could not be drawn out with the hands; they therefore devised a proper instrument to catch the head with its iron hands, as it were, and safely bring out the living foetus if possible^o. A list is in the same place given, in chronological order, of authors who have either invented such instruments, or so improved them that they might be made use of with ease and safety. It is at the same time remarked, that some of the instruments of the ancients could easily be adapted to this salutary purpose. For a pair of pincers was applied, whose broad extremities could take the head of the foetus; but those extremities were to have a hollow curvature, that they might be the better fitted to the round figure of the head, and that they

ⁿ Sect. 33. p. 37.

^o Crantz de re instrum. in arte obstetric.
sect. 9. p. 13.

they might take the larger portion of the surface, and so hurt the child the less.

But it is evident that such pincers as these could not have their legs joined together like common pincers; for then there would be a necessity of thrusting both ends into the womb at once, and afterwards there would be a necessity of opening them in the vagina itself, in order to take hold of the head; which could not but be attended with a violent tearing of the parts: besides, the extremities of the pincers ought to be placed between the head of the fœtus and the mouth of the womb, which could not well be effected if the legs of the pincers were joined together. But when the legs are separate, one may be introduced after the other; and afterwards, if there should be occasion, the legs of the pincers may on the outside of the vagina be fastened with an axis or a screw, passing through the holes of the legs, placed one upon another; and in this manner the head may be pulled out: it is evident from hence, that the legs should be of a good length. There however always remained a difficulty with regard to a straight pair of pincers to join the legs, for which reason Levret made use of a crooked pair of pincers, “whose extremities could
“cleverly take hold of the middle diameter of the
“head; whose legs are more easily joined and closed,
“and which, the nearer it brings the head, is the
“farther distant from the membranes of the privy
“parts i.” The construction of pincers of this sort being “suited to the form of the vagina, the pelvis,
“and the head of the child, bicurvilinear and hollow,
“obviated all the above inconveniencies q.”

In the same place he admirably answers all the objections which have been made against the use of these pincers.

An age or more is elapsed since some of the professors of midwifery have been much more successful than others at difficult delivery, when the head, as it were, wedged in, has stuck in the pelvis. They have been often successful in bringing about delivery upon

P Ibid. sect. 34, 35. p. 34, 35.

q Ibid. sect. 42. p. 45.

such occasions; whilst others, though of great experience in the art of midwifery, have failed: they have kept their method a secret, that it might not be known to others. It seems probable that the inventor was Chamberlin^r, an Englishman, who acquired a great reputation in midwifery, which he practised with his three sons. This secret lay hid for above sixty years, and Roger van Roonhuysen became famous for using it at Amsterdam; so that this secret method being either bequeathed or sold, with an injunction to secrecy, was possessed only by a few who became famous in the art. Therefore James de Vischer and Hugo van de Poll, are worthy of the highest praise for purchasing this secret, in order to communicate it, and for proving the certainty of the secret they had discovered by public testimonies, in opposition to some self-interested and dishonest adversaries, who wanted to impose upon the public. They gave so exact a figure of the instrument in all its dimensions, that artificers could imitate it any where.

This instrument is recommended by its simplicity; for it is a simple lever, whose extremity, inclining to a curve, is put in between the bones of the pubes and the head of the child, and is insensibly pushed forward till it comes to the occiput (the hind part of the skull) of the child, and every where touches its convexity with its curvature. Then the other extremity of the lever is raised by insensible degrees, till it touches the juncture of the pubes, which supplies the lever with a steady roller, and, by raising this extremity higher, the head of the infant is pressed a little lower and more forward, and is thus delivered out of these narrow passages. Whilst the midwife directs the lever with one hand, the other supports the anus in order to prevent a laceration; and at the same time directs the head of the fœtus, then disengaged, towards the foremost parts, where there is more room for the child which is about to be born. But every thing relating to the construction and application of this lever, is exactly described in the above-mentioned excellent treatise.

But though the excellent artists, who have invented or brought to perfection different sorts of pincers, deserve the highest praise on account of the industry and candour with which they have communicated their discoveries; this lever of Roonhuysen deserves to be preferred to all the rest.

This little and simple instrument may be easily hid, lest the woman in labour and the by-standers should be terrified at the sight of chirurgical instruments. Hence, whilst this discovery remained a secret, many were of opinion that the followers of Roonhuysen used no instrument, but were successful in these difficult deliveries, and often brought them about in a few minutes, by a dexterity of hand peculiar to themselves. They were chiefly surprised that the possessors of this secret, being called to women in labour, did not immediately enter upon the operation. For if the head did not then stick without motion in the narrow passes of the pelvis, but moved to and fro, they waited till it was thoroughly wedged in. The reason is evident; the extremity of the lever, applied to the occiput, would totter, unless the head of the fœtus was steady, and not liable to fall out of its place. It is highly beneficial, likewise, that the power of the lever should act upon the occiput, which is the strongest of the bones of the fœtus's head. The head being taken hold of by the pincers, is compressed and made more oblong than it was before: this makes the child's coming out more easy; but at the same time leaves some room for an apprehension, lest the soft encephalos (contents of the skull) should be injured by the compression.

Many successful experiments have more than sufficiently proved the utility of this simple instrument. For John de Bruyn, from whose only daughter and heiress this secret was bought, in the space of forty-two years delivered eight hundred children alive, whose heads were wedged in the narrow pelvis. So it appeared from the memorandum-book of De Bruyn, who was always thought highly deserving of credit. But as he had a very humble opinion of himself, and was traduced by the calumnies of men envious of his

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merit, he had not as much credit with his fellow-citizens as he deserved. But the number of children preserved by his art, must doubtless have been greater. For the few who were acquainted with this secret, having been often called to women who brought forth with difficulty, were surprised that he should in so many years preserve the lives of eight hundred children only, when they in a much shorter time had been much oftener successful. What destruction then have they brought upon the human species, who have concealed this secret! I wish Frederick Ruysch, to whom our art is so much indebted, may not deserve to be reckoned one of their number. What praise then is due to those, whose innate virtue excited them to reveal it! Such an action is its own reward, and the heart-felt joy of a mind satisfied with itself will be the prize of him who does it, at that time

—————*dum numina nobis*
Mors instans majora facit.—————

When from the near approach of death the gods
Over our minds new influence acquire.

As soon as the lever came to my knowledge, I recommended it to all midwives; and many have experienced it to be of the highest service.

If the pelvis should become so narrow by protuberances of the bones out of their natural place, or by their bad conformation, as to leave no hopes of getting out the fœtus by any art whatever, there then remains no remedy but the Cæsarian Operation. This will likewise hold, if the head of the fœtus should, contrary to the course of nature, be of such a thickness, as not to find room in the cavity of the pelvis, even when in its natural state; especially if the head should be solid and of a monstrous bigness. For if its bulk should be increased by lymph which distends it, it yields, suffers itself to be lengthened; and observations shews us, that such difficulty of delivery is often obviated by the lever described above. Sometimes the child's head, pressed by the strong efforts of the wo-

man in labour, is broke, and the lymph flows out; but the child generally comes out dead, or dies soon after its birth. The reader may consult what has been said upon this subject at §. 1217, 1218.

No one ever doubted that the Cæsarean operation could be performed upon the body of a dead mother, in order to save the life of the child; nay, in some countries it is ordained by law, that it should be always tried; and that law is a wise one. Charles, king of the Two Sicilies, made a law in the 49th year of the present century, which directs, that “Any person
“ by whose deceit, hindrance, or negligence, the Cæ-
“ sarean operation is neglected, to the loss of the fœ-
“ tus, or even retarded; and also he whose malice
“ occasions abortion; should be looked upon as guilty of murder.” Orders moreover were given to all judges, “to proceed against such with all severity, and commit them to jail, and prosecute them
“ according to the usual forms and laws of the king-
“ dom, that they might afterwards by those, whose
“ duty it is, be condemned to that punishment which
“ the law inflicts upon such as are guilty of murder,
“ according to the degree, quality, and circumstances of their treachery or negligence.”

All things relating to this subject in theology, jurisprudence, and physic, are to be found collected, digested, and defended against all objections, in this most useful work ^u.

It is obvious that the fœtus should be taken out of its mother's womb as soon after her death as possible; as it is then in great jeopardy. Yet the life of the fœtus should not be despaired of even a considerable time after the death of the mother, as is evident from many experiments, which may be examined ^v. Amongst others, there is an extraordinary case of a woman with child, who was stabbed in several places by her husband, out of whose womb a child was taken by the Cæsarean operation, forty-eight hours after her death; though it had been wounded in the foot through the
pierced

^t Cangia Mila embryolog. sacr. p. 255, et seq.
et seq.

^v Ibid. p. 72, et seq.

^u Pag. 53.

pierced womb, it survived during a quarter of an hour.

There should however remain no doubt of the death of the mother, before the child should be taken out by this operation. It cannot be denied that Winslow and others have demonstrated, that the symptoms of death are not so certain as is generally thought. It is well known that Vesalius, the emperor's physician, and the greatest anatomist of his age, was accused of an error of this kind, which he was obliged to expiate by a pilgrimage to the holy land, in his return from which he died.

Hence it follows, that there is need of the highest circumspection upon this occasion, especially if the woman with child should be thought to die suddenly; for she may deceive us by a syncope or swooning: wherefore such remedies as excite and strongly stimulate the nerves, should be tried before-hand; for it would be cruel to cut open the womb of a woman not yet dead, in order to take out the foetus, while there are no hopes of saving the mother at the same time by the operation, as shall presently be shewn. Therefore it is ordered by the Roman ritual, That, "if a woman with child dies, the foetus should with caution be taken out as soon as possible w." Nothing could be more cruel than the proceeding of those who advised to cut up the mother's belly when death approached, and not to wait till it was quite over. The venerable and learned author above-mentioned justly exclaims against such barbarity x.

When a skilful and prudent physician, after a chronic disease which has lasted a long time, or a very acute disease, perceives death approaching in a woman with child, he cannot easily be deceived, when he pronounces the patient to be dead; but it requires the greatest attention to distinguish a syncope from death. Great caution is requisite with regard to those who have in their life-time been subject to fainting-fits and hysteric disorders, and who have been seized with a violent syncope at the time of their pregnancy. For in such a syncope they turn pale, the face falls,

becomes ghastly, the extremities grow cold and hard, and both pulse and respiration cease entirely. I very well remember having been sent for on a sudden to a woman with child in her fourth month; she was so much exhausted with a cholera, and with sudden and copious evacuations, in five hours, that, after being seized with convulsions, she fell into a real syncope, so that she was thought to be dead by the bystanders when I came. For a quarter of an hour I had no success, though I caused her extremities to be rubbed, warm clothes to be applied, and both her tongue and nostrils to be stimulated with spirituous remedies. Her friends were offended at my tampering with the body. I however proceeded; and, after a few minutes, I perceived some motion in the carotid arteries; she opened her eyes, groaned, and by degrees came to herself. Her exhausted body was gradually restored by good nourishment, and her strength by cordials, so that her recovery was complete, and in seven months she was delivered of a living child; which however was weak, and lived but a few days.

That most infallible criterion of certain death, I mean the putrefaction of the body, cannot here be expected, for the fœtus must certainly perish first: sometimes we should be obliged to wait two days and longer, before the body could be smelt. Yet recourse is had in this case to the Cæsarean operation, in order to preserve the child.

When upon a careful, and not a superficial examination, no symptoms of life appear; if no respiration, no motion of the arteries, or heat is perceived; if the face was ghastly before death, the eyes dull and obscured by a sort of viscid covering; if the limbs are stiff, the extremities cold; if the upper jaw be separated from the lower, and there remains a gaping, which is however diminished afterwards, the elasticity of the muscles being increased by the cold of the body, but not so as to be quite shut up; if no sudden and copious evacuation precedes, such as may give room to suspect a complete syncope; if the motion of the humours, still and discontinuing, can be excited by no sti-

stimulating remedies^y; then, if there be not a physical, there is at least a moral certainty of perfect death, which is increased if no signs or sense of motion are observed upon the application of fire to the body.

For the above excellent author observes, “ There is a difference between saying that men have often been mistaken in thinking those dead who were really alive, and saying it is impossible to distinguish the living from the dead by any signs whatever: as it is one thing to say, that false coin is never uttered for true; another to assert, that there is no way of distinguishing good gold from bad; for the first assertion is true, the second altogether false^z.”

Wherefore, in those places where there is a law against burying the dead in less than eight and forty hours after death, they are allowed to be buried sooner if the physician, who has attended the patient in his last disease, gives it under his hand, and at his peril, that he is sure of the death's being real. Except in this case, the law is strictly observed, lest, in the country especially, where such shocking mistakes might more frequently happen, persons might be buried though dead only in appearance. Thus the dangerous practice of the Jews is counteracted, who think they do the deceased an injury if his body is not immediately committed to the earth, even whilst it is still warm.

The celebrated Heister, who is universally esteemed on account of his knowledge, his candour, and his long experience in practice, delivers himself upon this subject as follows: “ It very seldom happens, hardly once in a thousand instances, that even the vulgar, much less persons of skill, are deceived with regard to the dead; and that those who have been thought to be dead, have come to life again. Nor have I ever met with an instance of a woman with child, who has been thought dead, coming to life under the operation. But if this should ever happen, contrary to all expectation, the physician should not be too much shocked, because he is not
“ guilty

^y Ibid. p. 60, et seq.

^z Ibid. p. 66.

“ guilty of any crime, and did not proceed to dissection with an ill intent, but cut the body in order to preserve the foetus, which he is bound to do, as well by the precepts of religion as the laws, as we shall shew hereafter ^a.” But all suspicion of crime is removed, if the Cæsarean operation is performed upon the corpse with the same caution as upon a living woman: for then the wound could not be considered as mortal; nothing being more certain, than that women have recovered after having undergone this operation, as will appear in the sequel. The senate of Venice ^b wisely commanded, that care should be taken of this, that the abdomen should not be cut cross-ways, as is usual in the dissection of a corpse; but that it should be cut as in a living body, which undergoes the Cæsarean operation. It was likewise ordered by the senate, that the college of physicians should give in to the magistrate the names of those who were thought most capable of performing this operation. It required, at the same time, that a list of these names should be exposed to the eyes of every one, in every apothecary’s shop, that the inhabitants of Venice might know with certainty, whom they should have recourse to in these melancholy cases. This advantage would likewise follow from it, that surgeons would perform the Cæsarean operation with greater courage and dexterity upon the living, for having often performed it upon the dead: and, what some of the most eminent man-widwives have often wished, would come to pass; upon opening the body, the errors committed by operators would be discovered, whether owing to their ignorance or their rashness, and they might be punished according to their deserts if those faults could be discovered, which must otherwise for ever be concealed.

We come now to treat of performing the Cæsarean Operation upon living women, with a view of preserving the life both of mother and child. For though many observations sufficiently evince that this has been
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^a Instit. Chirurg. Tom. II. sect. 5. chap. 113. p. 758. ^b Ibid. in notis.

attempted with success, no man of skill can look upon the Cæsarean operation as free from danger. The abdomen, and the pregnant womb itself, turgid with its vessels dilated and full of blood, must have a large incision made in them. It is not strange that this operation should excite horror, not only in the women who are to undergo it, but likewise in the physicians and the surgeons who are to perform it. And as it is not always attended with success, many have condemned it altogether as cruel and useless. Add to this, that as both the woman in labour, and the bystanders, seldom consent to this operation till the strength of the former begins to fail, then death, if it follows, is ascribed to the operation, which might have been successful if undertaken sooner. Paræus^c indeed acknowledges, that though he has heard of the Cæsarean operation's being performed with success, he could never bring himself to believe that it has been performed with safety to the mother; for which reason he concludes, "That that method of cure should
" be always avoided as extremely dangerous." In like manner, Mauriceau^d loudly inveighs against the Cæsarean operation; which he declares should never be attempted on a living woman, being almost infallibly mortal, and of such a nature, that a woman can hardly survive it but by a miracle; nay, he goes so far as to make it a doubt whether any woman ever was cured by it. He censures all the stories that have been told of the Cæsarean operation's being performed without fatality to the mother, as falsehoods and impious frauds, and inveighs most bitterly against Rouffetus. There is a little treatise extant upon the same subject^e, in which the author, a man very well skilled in midwifery, declares, that he had never undertaken the Cæsarean operation, and never intended to undertake it, till he had read of some one who had performed it with success, by whose method of proceeding he might be directed.

That

^c Lib. de generat. cap. 31. Spach. gynæc. p. 422.
chap. 32. p. 352, et seq.

chap. 2. p. 316, &c.

^d Lib. ii.

^e Peu pratique des accouch. liv. 2.

That excellent surgeon De la Motte ^f, treating of the Cæsarean operation, confesses, that if the disadvantageous structure of the bones of the pelvis did not leave sufficient room for the foetus to come out, then there remained nothing but to chuse between having recourse to the Cæsarean operation, and letting both the mother and the foetus perish. He acknowledges, that if such a case should fall in his way, after advising with men of skill, he would without hesitation undertake the operation, and perform it with the utmost care. He says, that he takes this operation to be as possible as many other difficult operations; and that its being undertaken so late, and not till the woman in labour is in the utmost extremity, is the reason of its so seldom succeeding. He however condemns the rashness of those who have recourse to it in other cases of difficult delivery; being firmly persuaded, that, except where the vicious structure of the bones of the pelvis prevents the passage of the foetus, in all other cases of difficult delivery the midwives right-hand may give the patient relief. He then relates the case of a woman who had been three days in labour, whilst the arm of the dead foetus hung out of the orifice of the womb. The woman herself eagerly desired that a hole might be made in the abdomen, and the foetus taken out: and strenuously opposed the midwife and surgeon, when they were for thrusting their hands into the vagina, in order to examine how matters stood; nor could any advice, nor the horrid apparatus of instruments necessary in this operation, make her alter her fixed resolution.

Under pretext of proceeding to the Cæsarean operation, he ordered her to be held fast; and having plunged his hand into her womb, he seized the foetus, and in a moment of time drew it out entire, though quite rotten: thus did he preserve her, as it were, against her will.

But I was greatly surpris'd that the same author, at the end of the same chapter, after saying that he would undertake the Cæsarean operation without he-

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situation, in a case of necessity, should express himself as follows: “ The fear of seeming to approve this
“ cruel operation, and encouraging other surgeons
“ to attempt it after Ruleau’s example, makes me
“ protest, that though a case should occur, in which
“ the Cæsarean operation should seem to be necessary,
“ and though there should be good hopes of its being
“ successful, I should never be prevailed upon to at-
“ tempt it ^g” It appears to be a much more cruel operation, when he, on the fifth day, with a knife, cut the head of a child which stuck without motion in a narrow pass of the pelvis; and then having thrust his hand into the cavity, drew out the child still moving.

It is now known by a variety of experiments, that the Cæsarean operation has been performed, and yet the mother has lived and born children afterwards. In §. 170, n^o 3. where we treated of mortal wounds, two cases were related of the Cæsarean operation’s being performed with success, in one of which the midwife brought out the fœtus after having cut open the womb. Many more observations have been collected ^h, which shew that the Cæsarean operation has sometimes been performed with success, but it would be tedious to cite them in this place.

All authors are agreed, notwithstanding, that this operation is dangerous; and that recourse should be had to it only when the patient cannot otherwise be freed from her burden. For if we examine the history of Cæsarean operations, we shall find that recourse has been sometimes had to them when there were other methods of cure which might have been used with confidence. Thus we read, that, on account of an obstruction of the pudenda, the abdomen of a woman with child has been cut, that the fœtus might be taken out; but it cannot be denied, that this obstruction would have been with more safety removed by a penknife, as appears from what has been said above.
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^g Ibid. p. 326. ^h Acad. royal de Chirurg. Tom. I. p. 623, 650. Tom. II. p. 308, — 350. Cangia Mila embryol. sacr. lib. iii. cap. 1. p. 113, et seq.

Recourse has been had to the same operation, when the child, bent double, has presented with its posteriors foremost; yet it is well known that the skilful in midwifery never looked upon this as a cause of difficult delivery, as it is very common for the fœtus to come out in that manner with great ease. We read of many cases of women, who, having undergone the Cæsarean operation, have been often happily delivered afterwards; in these the pelvis could not be found fault with for its vicious structure, which is by no means mended by this operation. We read of others who have often undergone it, and who could not bring forth without it: in these the pelvis was doubtless too narrow to give passage to an adult fœtus. As long as, in the populous city of Amsterdam, Roonhuys's lever was known to but few, they alone knew how to disengage the head of the fœtus when wedged in the narrow passes of the womb; others being never, or very rarely, successful in this operation, and that only in the case of a dead child. Therefore, as the art of midwifery has been improved, with admirable discoveries by Roonhuys, Levret, and others, we may hope that there will but seldom be occasion for the Cæsarean operation; especially if a salutary law be made to prevent women, ignorant of the art, from doing the office of a midwife; for these, by their want of skill, often change a natural delivery into a very difficult one.

Recourse therefore should only be had to the Cæsarean operation when it is evident that delivery cannot be effected without it. According to Levret i, this proceeds from the too great narrowness of the pelvis; so great a narrowness as to prevent the man-midwife from getting his hand into the cavity of the pelvis, or at least so great as to make him unable to pull the child out by the foot when he has got hold of it.

But if, the womb being burst, as was said before, the whole body of the child should cling to the cavity of the abdomen, then delivery is impossible, and there

there remains nothing farther to be done but to proceed to the Cæsarean operation. But if we consider the terrible symptoms that generally attend a rupture of the womb; as for example, fainting, a ghastly paleness, coldness in the extremities, a weak pulse, and a cold sweat, which is often quickly followed by death; who will venture to attempt such an operation in so dreadful a state? yet it should be undertaken immediately, in order to be successful. Will the woman in labour, the parents, or the by-standers, be willing to give ear to desperate advice upon such an occasion; or will any surgeon be so presumptuous as to undertake the operation? The admirable Levret ^k has with good reason started all these difficulties.

With regard to those fœtuses which are formed without the womb, in the ovarium (the female testicle), or in the Fallopian tubes, &c. we shall speak of them hereafter; it is evident they cannot be got out by the method used in natural deliveries, for which reason the Cæsarean operation is necessary here likewise. But, as is justly observed by Levret ^l, before so dangerous an operation be undertaken, it should be known with certainty, that the fœtus is not in the womb, but without it. But the diagnostic symptoms which afford a full certainty of this, have not been hitherto discovered.

For though the pelvis must be of a proper size to give passage to the head, that the fœtus may come into the world, the delivery may become very difficult, though the pelvis be well conditioned, if the head of the fœtus be of an uncommon magnitude; and if it should be of such a size as to make its passing impossible, the Cæsarean operation alone could give relief ^m, especially if there should be any danger of a rupture of the womb from the kicking of the fœtus, whilst it sticks in these narrow passes. But as it is known from many observations, that even the large heads of robust children have been pressed out gradually, or pulled out by pincers or the lever of Roonhuys, since the

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bones

^k Ibid. p. 97.^l Ibid. p. 108.^m Crantz de utero rupto,

bones of the foetus can not only give way, but rise one above the other; when it is moreover clear, from what has been said before, that in the most difficult delivery, the bones of the pelvis recede from each other, and make the passage wider; it does not seem easy to have a perfect certainty of the impossibility of the foetus coming out, which however should be had before so dangerous an operation as the Cæsarean should be undertaken. It is known with certainty, that children afflicted with a hydrocephalon, have not only been born alive, but have lived for several monthsⁿ. I have sometimes seen such, and been surprised how they could get through the cavity of the pelvis. It is true indeed, the bones of the skull are generally very flexible in a hydrocephalon, and the whole head can be the more easily lengthened and fitted for passage. The reader may have recourse to what has been said upon this subject at §. 1217.

Rouffetus^o has wrote upon the method of performing the Cæsarean operation, which treatise being written in French, is not easily to be met with; but Casparus Bauhinus has translated it into Latin, and it is to be found in the collection of the Gynæcii. All particulars relating to the Cæsarean delivery are found collected in Heister^p. To these we may add what is to be found in Levret^q concerning the Cæsarean operation.

§. 1317. **A** DIFFICULT delivery also happens from a fault in the infant; as when it is immoveable, dead, or placed in such a manner as to shut up its own passage.

We are now to consider those causes of difficult delivery, which proceed not from the mother, but the child itself.

It appeared above, that the principal force by which the child is driven out, springs from the strong power of

ⁿ Ibid. in notis.

^o Isr. Spachii, p. 476.

^p Institut.

Chirurg. parteii. sect. 5. cap. 113. Tom. II. p. 755, et seq. ^q Suite des observations sur les accouch. labor. art. 9.

of contraction with which the womb is endued, and the powerful efforts of the lying-in woman towards the latter end of her labour: the fœtus does not seem to contribute much by its strength, excepting that by the motion of its limbs it irritates the womb, and makes it contract itself still more. It is evident, from daily experience, that even dead fœtuses may be forced out without much pain.

But the disadvantageous situation of the fœtus in the womb is often the cause of difficult delivery. The situation of the fœtus at the time of delivery, is looked upon as natural, when the top of the head with the orifice of the womb, dilating by insensible degrees, hangs over the vagina, so that the face looks towards the os sacrum of the mother, the occiput towards the bones of the pubes, the arms are fixed to the sides, and the feet elevated. The fœtus had not such a situation all along, but acquired it during the last months of pregnancy, sometimes sooner, sometimes later. For before this the head does not cling below, but above ^a. When the head rolls downward, the fœtus is then said to turn: in many, this happens about the eighth month; in some, when they are upon the point of being delivered. Hence Hippocrates tells us ^b, “ But “ if the child, when the membranes are broken on “ every side, by its own weight, leans on its head, “ the woman will be delivered with ease. But if it “ should come out transversely by its side or by its “ feet, for that often happens if the weight should “ lean to that part, either on account of the size of “ the womb, or if the woman has not first rested during the pangs; I say, if it should come out in that “ manner, the woman will be delivered with difficulty. From these causes, many women and many infants, and often both mothers and infants together, “ have perished.” In another place, he pronounces delivery to be in like manner difficult, if the fœtus should lie transversely in the womb, or come out by its feet. He speaks of its coming out by the head

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^a Noortwyck de utero gravido, p. 208.
cap. 2. Charter. Tom. V. p. 324.

^b De natura pueris

as a great advantage. “ For as, when a person puts
 “ an olive-kernel into a narrow-mouthed phial, it is
 “ not easy to bring it out transversely ; in like man-
 “ ner, a woman is in a bad situation when the foetus
 “ is transverse : it is a hard matter for the foetus to
 “ get out : it is bad likewise if it should come out by
 “ the feet ; for in this case, either the mother, the
 “ child, or both, perish. There is also another cause
 “ which renders its coming out difficult ; namely, its
 “ being dead or benumbed, or doubled ^c.”

It is now generally acknowledged, that the transverse position of the foetus in the womb is a cause of difficult delivery : but if it comes out by the feet, the midwives almost look upon the delivery as natural and easy ; and they are often successful even in difficult deliveries, and when the position of the child is disadvantageous, if they can but take hold of its feet, and so pull it out of the womb. Nor is the delivery considered as very difficult, if the doubled child comes out by its posteriors, provided it is not too brawny.

The foetus in the mother's womb is capable of motion : and as long as it is not fixed in the cavity of the pelvis, either by the head or any other part, it may offer sometimes one part of the body, sometimes another, to the fingers of the man-midwife. This has been remarked by Deventer ^d ; and he gives us to understand, that such moving foetuses seldom come forth properly turned, but generally lie transverse in the womb ; and then the humours being gathered, either nothing at all is felt, or sometimes the different parts of the foetus successively, the hands, the feet, the back, &c. La Motte ^e was called to a woman in labour, who thought the time of delivery just at hand : he found the mouth of the womb dilated to the size of an imperial piece ; the pains were increased, the humours were gathered, and he could easily touch the head of the child with his hands ; he was therefore of opinion that delivery would soon follow : but the pains ceased ; and the same day,
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^c De Mulier. Morb. lib. i. cap. 31. Charter. Tom. VII. p. 748.

^d Nov. lum. obstetric. cap. 40. p. 176.

^e Traite des accouch.

liv. 4. obs. 374. p. 570.

in the evening, returned with great violence; the mouth of the womb seemed to be greatly dilated, and the membranes which contained the humours seemed to be upon the point of bursting. The pains ceased again, and for thirty-five days she was tolerably well; she then had labour-pains again; but the head of the foetus could no longer be felt, nor any other part; and the humours having burst, through the violence of the pains, and La Motte having without difficulty got in his whole hand as far as the wrist, at last came to the foot and the hand of a very brawny and strong foetus, and brought it out by the feet, not without difficulty, on account of its bulk. Hence he justly concludes, that foetuses do not continue in the same posture, even after they have changed their ancient position by the sinking down of the head.

We read in scripture^f concerning Tamar, who was pregnant with twins, that, “The one put out his hand; and the midwife took and bound upon his hand a scarlet thread, saying, ‘This came out first. And it came to pass, as he drew back his hand, that behold, his brother came out; and she said, How hast thou broken forth? this breach be upon thee: therefore his name was called Pharez. And afterwards came out his brother that had the scarlet thread upon his hand; and his name was called Zarah.” But the fact is, that, of twins, each sticks to its peculiar membrane of the amnion, and that they are rolled up in the chorion which is common to both; but it seems to be far from impossible that the amnion may be broke in the womb by the motion of twins, especially during the pains of delivery, and then the twins may stick to the same membrane. Moreover, the celebrated Mery^g shewed the royal academy of sciences, twins who were wrapped up in the same membrane. Medical history affords us numerous instances of foetuses grown together, who should certainly have dwelt in the same hollow membrane: besides, we find that many masters in the art

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^f Genes. chap. xxxviii.
p. 116.

^g Acad. des Sciences, 1693. Mem.

of midwifery have laid down cautions to be observed in the turning of foetuses when they are to be pulled out by the feet, lest the several feet of the twins should be taken and pulled together, and the delivery, instead of difficult, be rendered impossible. What we read of in sacred history is hereby confirmed.

But when the foetus is placed without the womb, then delivery can never be effected by the usual method. It has been observed above, that, in a difficult delivery, the foetus sometimes sinks into the abdomen of the mother, the womb being burst. But experience shews, that foetuses have sometimes been conceived without the womb, in the Fallopian tubes and in the ovarium, and that in those places they have grown to the usual bulk. A woman was six times happily brought to bed; and, becoming pregnant the seventh time, was very well for six months: but in the beginning of the seventh month, she suffered a violent hæmorrhage of the womb: not long after, a yellow fetid ichor run out, and she began to feel a troublesome pricking in the vagina; some bones of the foetus were extracted by the surgeon, and afterwards more: but still the skull was found by the touch to be entire, nor did there seem to be any hopes of its coming out by the opening observed in the lateral part of the vagina unless the cohesion was dissolved by the rotting of the bones. Recourse was had to many remedies in vain; and the wretch, worn out and destroyed by purging, vomiting, and various sufferings, died. The corpse being dissected with art, it appeared that the Fallopian tube on the right side, being swelled to a sac, contained the remaining bones of the foetus: the womb was found whole and in good condition^h. We are informed likewise, that it is not very uncommon for foetuses to be conceived and to grow without the wombⁱ; we likewise meet there an extraordinary case of a foetus found, not in the cavity of the Fallopian tube, but in a sac formed by the external membrane of the tube: near the navel-string there grew a tumour which oozed

^h Anton. Benevoli dissertat. et 104, et seq.
Sciences, 1714. Hist. p. 29.

ⁱ Acad. des

ed forth a serous matter; this being dissected, the foetus was taken out, but it was then half rotten. The unhappy patient could however by no art be saved, but died on the eleventh day after the dissection of the tumour. It was remarked, however, that she had no milk in her breasts during the whole time of pregnancy. Many examples of the same nature are to be met with ^k.

But we read that a foetus was once formed in the ovarium itself, which, being broken by its increase, was found in that condition, with a considerable quantity of blood poured out into the abdomen, the Fallopian tubes and the womb being entire ⁱ.

It is obvious, that such foetuses, conceived without the womb, can be brought out only by the Cæsarean operation. But the diagnostic symptoms of such a case are not easily to be had; yet no wise man will advise this operation, or undertake it, without being absolutely certain that it is indispensably necessary. So that this is discovered in the corpse of the dead mother, or an abscess being grown in several parts, and then opened, the whole foetus or the bones of the rotten foetus loosened from each other are brought out: many cases of this nature occur in medical history.

§. 1318. **T**HE infant is known to be dead, if it be without motion; if the umbilical arteries have no pulse, especially in that part nearest to the body of the infant; if any thing fetid be discharged from the uterus; if the patient feels a great weight; if there be a tenesmus; if she falls into a syncope; if her breath be very offensive; the skin livid; if she is not delivered long after the waters are broke; if the epidermis of the infant easily separates from the skin, and the

^k Ibid. 1721. Hist. p. 27. et 1748. Mem. p. 108, et seq. ⁱ Philosophical Transactions abridged, Vol. III. p. 212, &c.

the skin is flaccid and readily separated; if the bones be soft, and easily moved.

We come now to treat of the symptoms by which the fœtus may be known to be dead. Before this can be known, the physician who attends at a difficult delivery should think of preserving both the mother and the child; but when the fœtus is dead, it may be treated roughly, and the mother's safety alone attended to. All symptoms therefore are to be duly weighed, and it is to be carefully considered what degree of certainty they have.

If it be without motion.] Though it is certain that the fœtus moves in the womb, yet this motion is very different not only in different women, but even in the same woman. I have known many who have thought that they would be delivered of a dead child, or at least of a very weak one, when they could scarce feel its motion, and yet a strong vigorous child was born. Women are often alarmed, when, at the time of delivery, they do not feel the motion of the child; but in a difficult delivery, when the waters break, the womb often contracts, and keeps the body of the child so immoveable, that scarce any motion can be perceived. The child, by being thus confined, is rendered dull and heavy, or may be seized with a fainting-fit; whence it is evident that this symptom alone is doubtful.

If the umbilical arteries have, &c.] In a natural labour, the navel-string cannot be touched; so that this symptom can only take place when the navel-string comes out together with the head, or some limb of the fœtus, or even when it slips out alone, which generally happens while the child lies in a transverse posture. Then if no pulsation is found in the umbilical arteries, it may be justly concluded, that the child is in imminent danger: yet its death cannot be inferred with certainty, even from this symptom; as the fœtus may languish, and yet afterwards revive.

If any thing fetid be discharged from, &c.] Fetid discharges shew that a corruption is begun, and is therefore a bad sign, but it does not always prove the
fœtus

foetus to be dead; for they may arise from other causes. Manningham has well observed, “ that all fetid discharges from the uterus do not always indicate the foetus to be dead, as they may arise from clotted blood too long retained^a.” For if blood should run out of the opened vessels of the chorion or the placenta, and yet should not flow freely through the mouth of the womb, what is left of it will grow clotted and will soon rot when approached by the air: this is likewise observed after delivery, whilst clotted blood which has been collected in the womb, and sometimes in the vagina, comes out with a very noisome stench. It has moreover been admirably observed by Mauriceau^b, that it sometimes happens, that, of twins, one dies and rots, whilst the other is alive and well. He assures us that he was witness of such a case in the wife of a counsellor, who said that she felt the motion of a living foetus, whilst the midwife who sat by her affirmed it to be dead and rotten. They both spoke the truth: for the first of the twins that came out was dead, and became a mass of corruption; the other was alive and vigorous. But a stink is also smelt if the foetus voids its excrements whilst still in the womb: and Mauriceau^c inveighs severely against those who look upon the excretion of the foetus’s filth as an infallible sign of its death; which is altogether false, as this often happens when the foetus comes out by its posteriors, and often too when the child, on account of its disadvantageous position, should be turned in the womb, that the man-midwife might have it in his power to draw it out by the feet.

If the patient feels a great weight.] This symptom chiefly takes place when the child has been dead some time before delivery: for if the woman with child has for some days perceived no sort of motion of the foetus, and at last perceives it when she turns to one side or the other, and if the unwieldy weight rolls this way or that, there is then sufficient reason to infer

^a Art obstetric. compend. p. 13.
femm. gross. Tom. I. liv. 2. chap. 12. p. 277.

^b Traite des malad. des

^c Ibid. 278.

fer the death of the foetus. However, if the foetus had already entered the cavity of the pelvis, and should die whilst sticking there, it is evident that this symptom does not then take placē, as the foetus in such a case could not change its situation; especially if the womb should contract itself, the humours having flowed out. Hippocrates took particular notice of this: *With regard to the time of the foetus's death, it may be conjectured from other symptoms, and the physician should moreover order the patient sometimes to lie upon her right side, sometimes to turn to the left. For if the foetus was dead, it would roll about in the womb like a stone, whichever way the woman should happen to turn herself, and the hair about the privy parts would be cold. When the foetus is alive, the hair about the privy parts is warm, and nothing falls in the belly except the whole fall together*^d.

If there be a tenesmus.] The living mother, even unknown to herself, sometimes makes an effort to drive out the body which is hurtful to her. A tenesmus however does not always happen: but the patient is often observed to faint, and her hair to stand on end; and if the dead foetus should begin to rot in the womb, then a stink is smelt. But a particular change may be remarked in the face of the pregnant woman when she carries a dead foetus: she looks pale and livid; her lips in particular are of a livid hue; there is an expression of sadness in her eyes, nor do they shine with their wonted brightness, though the pregnant woman should be ignorant of her melancholy condition. A remarkable instance of this I observed in the noble matron of whom mention has been made at §. 1306. who was twice delivered of a dead child, the navel-string of which was tied into a knot in the womb: her countenance appeared sad, though she

^d Quum mortuus foetus fuerit, tum aliis signis conicere licet, tum etiam jubere oportet, ut modo quidem in dextrum Latus jaceat, modo etiam in sinistrum convertatur. Dilabitur enim foetus in utero, quocumque se vertat mulier, velut saxum aut aliud quidpiam, si mortuus fuerit; et pectinem frigidum mulier habet. Quod si vivat, pecten calidus est, et totus quidem venter cum reliquo corpore decedit, nihilque in eo absque reliquo corpore dilabitur. *De superfatatione, cap. 4. Charter. Tom. VII. p. 862, 863.*

she told the standers-by that she was in good spirits. In two days her breasts fell; she afterwards began to languish, and to be seized with a slight fever; and this continued till the dead foetus was taken out. Thus this lady looked as pale, from the near corpse, as the willows with which gardeners prop weak trees, in the beautiful description of Vanierius ^c.

*Ut mors caeca rapit sæpe optima quæque, salignum
Exstinctus tilia atque ulmo, mirabere truncum
Fundere pallentes vicino funere ramos.*

If she is not delivered, &c.] In this case, the foetus is strongly compressed by the contracted uterus; whereas it before swam in the liquor of the amnion, and was free from all pressure. It is then universally agreed, that the foetus is in danger of death; but this symptom is by no means infallible, as many observations prove, that the foetus has stuck for many days in this dangerous situation, and yet been born alive at last.

If the epidermis, &c.] At §. 427, 429. where we treated of the gangrene and mortification, it was observed, that whilst part of the body tends to death, the epidermis, separated from the skin, is puffed into bubbles, full of a watery humour. Skilful anatomists know, that when putrefaction is begun in the body, the epidermis easily separates from the parts beneath; which artifice they often make use of, in order to examine and demonstrate the structure of the epidermis. Hence it is evident that this symptom is of great consequence when the death of the foetus is in question.—
Much more

If the epidermis of the infant easily separates.] For a softness, a flaccidity, which does not resist the touch, be it in what part of the body it will, is reckoned amongst the symptoms of a formed gangrene (see §. 427, no 4.) But if to this he added a skin easily separable, (see §. 429, no 4.) it is not looked upon merely as an indication of gangrene or death begun, but of mortification or death complete. If in a difficult delivery a child should for a long time stick with its head fore-
most

most in the orifice of the womb, then that part of the head which answers to the opening of the orifice of the womb, is raised into a tumour in case it lives; but when there is no such tumour in the case, or when after rising it immediately sinks and grows flaccid, the midwives generally despair of the life of the foetus: "If the head of the infant should stick in coming out, without being swelled, there is reason to think it is dead ^f.

If the bones be soft and easily moved.] This is to be understood of the bones of the foetus's head; for it is well known that the skull of a child just born is in part nothing but membrane. As long as that membranous part is stretched by the encephalon contained in it, the head resists: but when the parts sink after death, the membranes subside, the bony parts of the skull move to and fro, and easily approach each other; for which reason this too is looked upon as a bad symptom. Whence it happens, that the foetus being dead, and the bones soft, the head passes with the greater ease; yet a difficult delivery is not always rendered easy thereby: "For the head of a dead child, being become soft by being reduced to corruption, does not, like that of a living child, help out the shoulders ^g." Thus it often happens, that midwives, in striving to bring out the child by the head, pull it off from the trunk; which being left in the womb, it is not easily got out afterwards.

As it is evident from what has been said, that all these symptoms do not afford a full certainty of the death of the foetus, it follows that great caution is required lest a living foetus should be treated as a dead one. In Hippocrates we read of a woman who in the fourth month of her pregnancy, swelling with an anasarca all over her body, was at the same time troubled with so terrible an asthma, "that she could not lie down, but, whenever she had any disposition to sleep, slept sitting. She was, generally speaking, free from a fever, and the foetus for a long time did not move, but as it were had a tendency to corruption."

^f Manningham. art. obstetric. compend. p. 23.

^g Ibid.

"tion^h." This asthma lasted for the space of two months; she afterwards grew better by the use of beans tempered with honey, an electuary of honey, and Æthiopian cummin taken in wine. Afterwards having by the cough thrown up much mellow, pituitous, and white matter, the difficulty of breathing ceased, and she was delivered of a girl. Now, as there is no mention made either of abortion or a dead child, it seems highly probable that she brought forth a living girl, though the motion of the foetus was not felt in the womb, and the mother was afflicted with so severe a disorder. Unskilful physicians would have attempted to remove the stagnation of watery humours by violent remedies, and would have neglected the foetus. Hippocrates, by using mild remedies, eradicated the disorder, and saved the child.

Some cases have already been mentioned of living foetuses cruelly torn with hooks, because they were thought to be dead. Many cases of the like nature are to be met with in medical history. I shall allege but one example more, because Deventer himselfⁱ, notwithstanding all his skill in midwifery, acknowledged that such a misfortune befel him. He was sent for to a neighbouring village to attend a woman who had been many days in labour, though the child was in its natural position. For two days time, neither the midwife nor the mother could perceive any motion of the child: they were therefore convinced that it was dead; and Deventer acknowledges that he could form no other conclusion. Being therefore wholly intent upon saving the mother, he treated the child very roughly; yet it came at last alive into the world, and lived a few days. There were two or three lumps on its head, occasioned by the too great compression it had suffered, which gave him particular concern. He however adds what follows: "I own this mistake has
" been, even after so many years, a warning to me,
" and will continue to be so as long as I live; so that
" I will never suffer myself to be over-persuaded, ei-
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^h Epidem. 7. ægrot. 2. Charter. Tom. IX. p. 557.
ⁱ Hum. obstetric. cap. 32. p. 140. et seq.

“ther by a woman in labour or a midwife, to treat a
 “fetus as dead: nay, I am diffident even of my opi-
 “nion, thinking no symptom infallible but the disso-
 “lution of the last skin of the head, which indeed is
 “there not easily dissolved, because it sticks to the
 “intervening hair; nor can the touch proceed any
 “farther without great difficulty.” He gives us to
 understand, that those difficult cases happen then chief-
 ly when the head of the fetus is too big, or the pelvis
 too narrow. But as midwifery has received new im-
 provements from new inventions, we may have good
 hopes even in the most difficult cases, as is evident
 from what has been said at §. 1316. He tells us that
 the same difficulty may take place, “if the child sticks
 “in its passage, like a crooked elbow, on account
 “of the obliquity of the womb.” But we shall treat
 of this subject in due time. Therefore, now that the
 art of midwifery is more complete, and more perfect
 than ever, we may reasonably admit the conclusion of
 Deventer^k: “Such children as are here spoken of,
 “whether living or dead, should be taken out of the
 “womb only by the hand of the midwife, and not by
 “any instrument capable of hurting; because, as has
 “been said already, one cannot easily be positive whe-
 “ther they are living or dead.” No one can repent
 of having, in a difficult delivery, treated a dead child
 as though it were alive; but what stings of conscience
 must torment those who have rashly dragged out a li-
 ving child, torn and mangled with hooks!

§. 1319. **A**S soon as it is certain that the foetus
 is dead, (§. 1318.) it is to be ex-
 tracted by the feet, if possible, lest the mother
 should be seized with a gangrene, a syncope, or
 death.

As long as the dead fetus clings to the closed mem-
 branes, it is not quickly corrupted: but when the
 membranes are broken, and the humours have run
 out,

^k Ibid. p. 142.

out, the air has a free passage; and then the fetus quickly rots in the warm and humid womb. But whilst the womb is on every side contiguous to the rotten body, there is danger of its being very much injured, and very bad consequences may follow from the putrefaction imbibed. The abdomen of a drowned animal having burst in the midst of summer, exhaled so horrid a stink, that I almost fainted in passing by it, though naturally of a good constitution, and at that time in perfect health and the vigour of youth; we should not therefore be surprised at a syncope's being the consequence of the rotting of a fetus's body in the womb of a living mother. From the putrefaction imbibed, a malignant fever may arise; which continuing after the dead fetus is taken out, may put an end to the mother's life. Wherefore Manningham^a wisely reminds us, "that women who are delivered of
 " a dead and corrupt fœtus, are generally seized with
 " a continued fever, and die a few days after delivery." Wherefore all are agreed that the dead fetus should be taken out as soon as possible. Mauriceau^b observes, that when the fetus has been dead for any time, the pains cease, or become so faint, that they are not capable of forcing out the fetus. In that case he advises to excite the efforts to delivery by a strong clyster; and if that should not succeed, the dead body of the fetus should be pulled out by the hand of the midwife, rather than the *ecbolic* remedies (medicines used to help delivery in hard labour) should be used; for as these are sharp and warm, and may prove very pernicious, no prudent man would place any confidence in them.

It is now thought the best method to pull out the dead fœtus by the feet, having first turned it, if it was in a different posture before; this turning shall be treated of in the next aphorism. But when the head is wedged in, it cannot be pushed back; wherefore in this case Mauriceau^c advises to pull it out with hooks: this is now happily effected by Levret's pincers, or

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^a Art. obstetric. comp. p. 23.^b Traite de malad. de femm. gross. &c. liv. ii. cap. 30. Tom. I. p. 342.^c Ibid. p. 344.

Roonhuy's lever, and with much more safety than by the terrible apparatus of hooks. At the same time care is taken of the man-midwife's reputation, and malicious midwives prevented from saying, as is very common with them, that he killed the child, which he pulled out dead, with hooks. What great improvements have been made in this article of pulling out dead fœtuses, will appear evidently from a view of the method recommended by Hippocrates^d for this purpose. For he ordered the hands and shoulders to be cut off, the breast to be cut in two up to the throat, and the ribs to be beat down whilst the fœtus remained in the womb. In another place^e he directs that the person who does the office of midwife, should let a nail grow upon the middle finger, to break the shoulders from the neck, and tear up the belly. He then directs to take out the guts, and to crush the soft ribs; that the body of the fœtus, being reduced to a heap, may be the more easily pulled out. We meet with directions of a like nature, or even still more cruel, in another place^f.

Whilst the dead fœtus, being taken hold of by the feet, is drawn out, it sometimes happens, especially if putrefaction is begun, that, the whole trunk of the body being pulled out, the neck is broke off, and the head alone left in the womb. In that case the mouth of the womb generally contracts itself over the head which remains, and ascends with it, and that so high, that the celebrated Simpson^g informs us, that he has sometimes been obliged to thrust in his hand the length of a foot and more, before he could touch the head of the fœtus. When the head is so far distant from the privy parts, it would be dangerous to make use of hooks; and if the bulk of the head should exceed the cavity of the pelvis, then by taking it out the soft parts which lie between the head of the fetus and the bones of the pelvis are crushed; whence dangerous con-

^d De Mulier. Morb. lib. i. cap. 69. Charter. Tom. VII. p. 769, 790.

^e De superfœtatione, cap. 3. ibid. p. 862.

mortui exsectione, Charter. Tom. XII. p. 550.

^f De fœtus in utero

and observations, Vol. V. part i. p. 446.

^g Medical essays

consequences are to be feared. He therefore thought it would be of service to diminish the bulk of the head, by taking out the encephalon or contents of the skull, and either separating the bones of the head or pressing them together. That he might be able to effect this with safety, he invented the ring^h to which the knife is fastened. This ring he applied to the second part of the fore-finger, so that the edge of the knife might look towards the palm of the hand: having then bent the finger at the middle joint, the edge of the knife becomes parallel to the first part of the finger, and is in that manner introduced together with the hand: the head is taken hold of by the thumb and the other fingers; then the fore-finger is extended, and the knife infixed in the head; and thus an opening is made, into which the fingers can be thrust, the skull evacuated, and the bones taken out. He has observed, however, that it was not always an easy matter to separate the bones from each other, but that this may be brought about by waiting a little time. By this method he evacuated a skull, and loosened one of the bones of the forehead, yet could not get out the head. After that the unhappy woman in labour had been quite wearied out, and Simpson himself had discontinued his operation for three hours, he then could easily separate the bones from each other.

These are the chief remedies which are to be applied in this melancholy case.

But if the dead foetus cannot be got out, it will rot; it will infect the parts next it; the putrefaction will be sucked in, and the mother's humours be horribly corrupted. Thus, after long and severe sufferings, death will sooner or later follow. For this reason Hippocrates expresses himself in these terms: *But if a child dies in the belly of a woman, and does not come out, the womb being then humid, or even when it contains no humour, and when it has been dried; the child at first swells; then its flesh dissolves, grows rotten, and falls out; last of all, the bones come out; and the patient sometimes makes an evacuation by the womb, if she does*

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not

^h Ibid. tab. iv. fig. 1. p. 468.

not die first ⁱ. It is generally known, that whilst a body rots, it swells chiefly about the abdomen, as Hippocrates has justly observed. If the flesh, being quickly dissolved into putrid matter, runs out, and care has been taken by proper remedies to prevent the mother's humours from corrupting, such have sometimes escaped, the bones being successively driven out, either by the vagina or the anus, after the ligaments have been dissolved by the putrefaction; the gangrene which consumed part of the vagina and of the rectum of the woman in labour, having first grown and been separated; whence the patient is, during the remainder of her days, subjected to the inconvenience of voiding her excrements by the vagina. We meet with such a case ^k of a woman, who having fallen down in the fifth month of her pregnancy, was seized with a fainting fit; which was followed by a violent fever, and a copious hæmorrhage of the womb, accompanied by efforts to delivery: she recovered in such a manner, that she was able to work as usual; the belly neither increased in bulk nor diminished: she then felt the pains which are always attended by an hæmorrhage. Eight months being elapsed, all these evils increased, and they ended by a copious purging, attended by a cadaverous smell, with so great a weakness in the woman, till then of a robust constitution, that her life was despaired of. After a few days, the limbs of the dead child began to come through the anus, first the arms, then the other limbs; so that in the space of eight days, every part of the fetus had passed through the anus, except the lower jaw-bone which came out afterwards. She however recovered thoroughly from so great an illness.

Sometimes dead fetuses have come out of the umbilical region bit by bit. Bartholinus ^l tells us, that

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ⁱ At vero, si cui puer immortuus fuerit in utero, neque exierit, humido existente utero, etiam nullum humorem continente, imo quum siccatus fuerit uterus; primum quidem puer intumescit, deinde colliquefcunt et putrescunt carnes, ac foras effluunt, postremo vero ossa prodeunt, fluorque aliquando illamprehendit nisi prius moriatur. *De superfat.* cap. 4. *Charter. Tom. VII. p. 862.*

^k Acad. des Sciences, in 4to, l'an 1746. *Hist. p. 43, 44.* ^l *Epistol. Medic. cent. 4. Tom. IV. p. 99.*

he observed this in a woman who was thought to be with child of twins. Delivery approaching, nothing appeared after two days labour; at the end of six weeks, he thought that he again felt the fetuses move; this seeming motion continued during the space of five years, but in such a manner that he could perceive them to be insensibly pressed together and diminished. The navel afterwards swelled, and burst; on the first days limpid water, soon after blood and purulent matter, run out, with some few bones. Thus through a hole, open in the navel for seven or eight years, several little bones came out by degrees; there was then formed another hole below the navel, from which the other bones of the child were every day forced by the efforts of nature, with great pain to the mother.

Bartholinus informs us, that he preserved several of these little bones in his library. Observations of the like nature have been made by others ^m. It has been thought, and not without reason, that often fetuses, either coming out entire, or brought out bit by bit, have stuck on the outside of the womb's cavity. A pregnant woman, the usual time of pregnancy being past, suffers a most violent labour, and yet is not delivered of her burden; she is afflicted with a fever, pains in the abdomen, belly-achs, aphthæ, and other terrible symptoms: afterwards there appear little bladders over the navel, which shew that a gangrene is approaching; which being burst, a great quantity of humour runs out, and then part of the navel-string corrupted, with a great stink. After ten days the left hand of the fetus came out, the length of a cubit, through the common coverings of the abdomen, which were then seized with a gangrene. After two days, the abdomen being cut, a fetus of a considerable size was brought out entire, but stinking: the placenta was got out with greater difficulty, as it stuck not to the womb, but to the Fallopian tube, or the ovarium, on the left. However, in the space of nine months this woman recovered perfectly of so dreadful

ful a disorder, and she shewed the physicians and surgeons who had attended her, her belly closed up with a deep scar, but without a navelⁿ. I have singled out this case, because I was intimately acquainted with all the physicians and surgeons by whom the patient was attended, and could have no doubt of their skill and candour.

Though the carcase of a foetus left in its mother's body generally rots, and afterwards often comes out bit by bit in several places, yet some extraordinary cases shew that it has sometimes remained uncorrupted for several years, and been troublesome only by its bulk and its weight. Thus we read^o of a woman of the province of Lyonnois, who, dying in the 68th year of her age, had carried in her womb a dead foetus for twenty-seven years. She had lived married, but barren for many years, and in her fortieth year perceived the symptoms of pregnancy: her monthly evacuations had ceased; she had long been troubled with a depraved appetite and longing for things not fit to be eat; she felt the motion of the child at the usual time, her breasts swelling with milk; her labour at last began with a suppression of urine for some days, which afterwards flowed from her in great plenty; it was likewise thought that her waters had burst out, she having at the same time voided a lump of coagulated blood. Afterwards her breasts fell, and little or no motion of the child was perceived; no delivery ever followed: the wretched woman was bed-ridden for three years; she lingered out the rest of her life, complaining of a swelling, of hardness, and of a heavy weight in her abdomen, according to the various motion of her body, as she lay down on this side or on that: at the same time her appetite was faint, and she endeavoured to whet it with vinegar and the juice of unripe grapes. She at last died, after having suffered all this misery, during twenty-seven years. Skilful surgeons, having opened the corpse, found that the womb was shrivelled,

ⁿ Cornel. Trioen. observat. medic. chirurg. fascic. p. 64, et seq.

^o Maur. Chordæi Rhemi, comment. 7. in lib. i. Hippoc. de Mulier. apud Spach. in Gynæc. p. 740.

led, party-coloured, and at the same time rough and hard to the touch. So hard a womb was not without difficulty dissected; in its cavity was found a foetus transversely placed, and folded into a circle. The surgeons, astonished at so extraordinary a sight, sent for physicians to be witnesses of this phenomenon, and to pass a judgment on it: but that the whole might be more conveniently examined, they pulled out the whole bulk with their hands and with hooks, and carried it home: this could not be done without the exertion of great force. In this hard womb, they found the foetus, at the right hip, the buttocks, and part of the back-bone, entirely grown to the hollow surface of womb: the bones of the head were thin, but firm; they shone like horn; and the skin of the head was hairy in many places: the left fist was so strongly clinched, and the tops of the fingers so stuck to the palm of the hand, that though they appeared to be distinguished from each other according to their order, they had in fact grown into one and the same stony body. The right arm extended its hand towards the navel; that hand had by the surgeons inadvertently been cut off, and left in the mother's womb. "Upon forming a general judgment by the sight and touch, you would declare the whole to be the work of a Phidias, who had made a most complete figure of a full-grown foetus either of ivory or marble, especially as the body, being of such an hardness, did not fall into decay, but retained not only a shining skin, but its whole symmetry and compactness. But all the internal parts, the bowels, the heart, and the brain, were in their natural state, excepting that they were grown extremely hard, less so however than the external parts; so that the body, being still shewn, does not appear to be in danger either of rotting or being worm-eaten." As a thousand witnesses have seen and touched this fetus, there can be no doubt concerning the fact ^p.

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^p Maur. Cordæi Rhemi comment. 7. in lib. i. Hippoc. de Mulier. apud Spach. in Gynæc. p. 478.

We meet with another history of a fetus ^a that lay hid in the mother's belly for forty-six years. The woman, in the forty-eighth year of her age, felt all the symptoms of pregnancy, and at last underwent the pains of delivery during seven weeks: these, upon the application of the bath, discontinued; but the abdomen remained swelled and troublesome, on account of its weight, though there was no pain in it. She afterwards was delivered of two children in perfect health. She lived forty years longer after the death of her husband; and as she always thought herself with child, she was desirous that her swelled abdomen should be cut open after her death.

The surgeon cut up the corpse awkwardly enough, and pulled a pretty large globe out of the abdomen; this he opened with a stroke of an ax, as it was a little of the hardest. This globe was left in the same state, as it was to be kept in his serene highness the duke of Wirtemberg's closet. But the celebrated professor Camerer, could, through the cleft made with the ax, discern the fetus contained in this globe; its head was deformed, and its breast very flat; and though this fetus was still flexible enough, yet it did not stink. The cover which contained the fetus, appeared to be very hard, cartilaginous, and even bony, in its whole extent, except in that part by which it stuck to a certain place of the abdomen; for there the softness was greater, and it stuck to fat and red flesh. Camerer justly concluded, that that fetus being conceived in one of the Fallopian tubes had grown there, as the mother was afterwards delivered of two children.

This fetus, being by the orders of his most serene highness the duke of Wirtemberg sent to Paris, was seen by the celebrated Morand^r, who likewise relates a history of a dead fetus that had been carried in the womb one and thirty years. In the same place there are many more passages very well worth reading concerning fetuses which have a long time lain hid in the body of the mother.

§. 1320.

^a Acad. des Sciences, l'an 1721. Hist. p. 43.
Sciences, l'an 1748. Mem. p. 113.

^r Acad. des

. 1320. **T**HE position of the infant should be that in which it can be delivered, that is, with the head foremost, or rather by the feet.

What the position of the child should be in a natural delivery, was shewn at §. 1317. so that if the fetus be placed in such a manner as to shut the door against itself, then that position is to be changed and reduced to a natural one. Particular care should be taken never to give warm, stimulating potions in a delivery, whose difficulty proceeds from this cause; the woman in labour, the bystanders, and the midwives, if they be unskilful, insist upon these. Yet it is certain, that the pains of delivery are so much the more dangerous, both to the mother and the fetus, as they are more frequent and more violent, if the fetus be so placed that it cannot come out. A prudent physician will rather give a gentle refreshing potion than one that stimulates; he will act in this manner, that he may appear to the querulous woman in labour to prescribe something, and thereby encourage her whilst she takes proper measures to alter the disadvantageous position of the fetus with a skilful hand. It is a great advantage to know betimes whether the fetus is badly placed. When, in the natural situation, the fetus, with its head foremost, pushes against the mouth of the womb, it is insensibly dilated during the efforts of the woman in labour, and the membranes placed before the head of the child begin to swell with gathered humours, and form a tumour round and tense whilst the pains of delivery are felt, but more flaccid and weak when the pains begin to remit. Thus the mouth of the womb is insensibly, and by an equable force, more and more dilated, and disposed to happy delivery. Wherefore all who are skilled in the art of midwifery, advise not to break too quickly the humours which are just beginning to gather, the orifice of the womb not being then sufficiently dilated. For it sometimes happens in a happy delivery, that the fetus bursts out
still

still shut up in its membranes. But when the humours have to such a degree distended the membranes, and the mouth of the womb has been to such a degree dilated, that the head of the child, which is behind the humours, can roll into the mouth of the womb, and fill its whole capacity, then the humours may burst out; which is easily effected, if, at the time of the pains, the midwife presses the swelling membranes with her finger, or gently twists them. But if these membranes should be extremely tenacious, they may be cut: but this should be done with caution; because, the humours bursting out, the head of the foetus soon follows. Moschion^a reckons it one of the causes of difficult delivery, if the membranes, being too thin, are too quickly broke, and so that humour is poured out which was prepared (*δια το ολισθημα*) to lubricate and facilitate the passage of the foetus. Mauriceau and others have made the same observation.

But if the uterus be rightly placed, that is, if its orifice directly answers to the vagina, and if the humours are lengthened out and gathered in an oblong form, it is a sign that the child is disadvantageously placed, and is not disposed to come out with its head foremost^b. But when the head is not very remote from the orifice of the womb, then he gives the following direction: “ If the midwife should find the woman rightly placed, and the humours drawn out in length; if she should be sometimes able to touch the hand, sometimes the foot, or even the head, then she should not neglect the opportunity, but, concluding the humours to have swelled to a sufficient height, and partly feeling the head by her touch, she should, without delay, break the membrane with her nails, and should immediately with her fingers direct the head to the passage, having removed all obstacles, such as the hand, the foot, and the navel-string; which may be then easily done, because there is room enough. The head being thus brought into the passage, the midwife need not apprehend “ that

^a Spach. Gynæc. p. 19, 150.
obstetric. cap. 40. p. 177.

^b Deventer, nov. lum. art.

“ that it will recede from it; for the humours having
 “ run out, the infant in the womb has not time to
 “ move this way and that; because the womb, being
 “ immediately contracted, compresses the infant on
 “ every side.” Nay, when the humours have run out,
 the womb becomes so narrow, that it is with difficulty the child can be turned and brought to another position; whilst all the parts are dry. All those who have written upon midwifery, complain of this difficulty; and for this reason, they advise midwives to call a skilful surgeon to their assistance, if they think themselves unable to effect delivery expeditiously. For the fetus is in danger, and the woman in labour is weakened, if the turning of the child is not attempted till long after the humours have run out; and a greater force must be applied to the womb, when the position of the fetus is to be changed in it, at a time that it is contracted and dry.

It was the opinion of the ancient physicians, that the fetus in the womb was full of motion; for this reason they endeavoured to change the disadvantageous position of the fetus, and shook the woman in labour often and strongly. Thus Hippocrates^c, whilst he endeavoured to turn a fetus, that it might come out by the head in the natural way, gives the following directions: “ Something should be laid under the hips
 “ of the woman in labour as she lies; something
 “ should be also put under the feet of the bed, that
 “ the patient may be raised higher towards the feet.
 “ But the hips should also be raised higher than the
 “ head, and there should be no bolster under the head.
 “ Care should be taken of these things; but when the
 “ fetus is moved out of its first place, and turned
 “ this way and that, having taken away the stones
 “ which were placed under the feet of the bed, and
 “ having removed what was placed under the patient’s hips, restore both the bed and her to her
 “ former state, and put a pillow under her head.”

It is evident that Hippocrates endeavoured in this manner to change the disadvantageous position of the

fetus to a natural one. It however seems doubtful, whether he meant to render the position of the child natural by the concussion caused by the removal of the props which were placed under the bed, or whether he thought this already effected. For Cornarius refers the following words, *και κατα φυσιν καθις ασθαι*, to the foregoing, which relate to the position of the fetus; but Foësius and Charterius were of opinion, that they rather related to the patient's being restored to her former position. But other passages of Hippocrates seem to shew, that he expected the change of the fetus's position from the concussion of the woman in labour. For in the preceding chapter^d, he recommended to promote delivery, by such a concussion, whilst the pangs were approaching. Moreover, in another place^e, in speaking of a fetus which fell transverse-ly in a woman in labour, he adds, "The patient
 " should be shaken in this manner: She is to be laid
 " on a thin piece of linen, another being thrown o-
 " ver her to veil her pudendum; each of her legs is
 " to be covered with a thin piece of linen, and so is
 " each hand. Two women should take hold of each
 " leg, and two more of each hand; then they no less
 " than ten times should shake her hard. Then the
 " woman should recline upon the bed, in such a man-
 " ner as to have her head downwards, but her legs
 " elevated; and all the women present should take
 " her by the legs, and shake her hard in the bed, ha-
 " ving thrown her upon her shoulders, that the sha-
 " ken fetus might have the more room to turn, and
 " might come out naturally."

It was observed before, that till the humours had run out, the fetus was full of motion in the womb; and that now one part of the womb's orifice was touched by it, now another. Deventer^f confirms this by his testimony; and at the same time informs midwives, "That these moving children seldom come
 " out in a proper position." But the humours ha-
 " ving run out, the contracted womb presses the fetus
 on

^d De foetus in utero mortui exsectione. Charter. Tom. XII. p. 551.
^e Ibid. p. 768. ^f Nov. lum. art. obstetric. cap. 40. p. 176.

on every side, and its position could not easily be changed by any concussion. Besides, there would be reason to apprehend, that a separation of the placenta from the womb might be the consequence of those violent concussions, and that might give rise to a dangerous hæmorrhage. This method of the ancients is therefore now entirely laid aside; and the position of the child is altered in such a manner, by the skilful hand of a man-midwife, that it may come out head-foremost; or, if that cannot be brought about, may be pulled out by the feet.

For whilst the fetus is disadvantageously situated in the womb, it cannot always be reduced to such a position as to come out by the head: this can be effected only when the head is not very distant from the orifice of the womb, so that it can be easily touched by the fingers of the midwife, and moved out of its position: Mauriceau^s was highly offended with the physicians, for giving a general direction to alter the disadvantageous position of the child in such a manner as to render it entirely natural; as this is often absolutely impossible, and cannot be attempted without danger, both to the child and the mother: he therefore laid it down as a general rule in midwifery, That, in any disadvantageous position whatever, the fetus should be pulled out by the feet; which maxim is now generally assented to by the most able professors of midwifery.

Delivery is not now-a-days looked upon as out of nature if the feet of the child should come forth first; nor do the skilful look upon it as difficult, it being certain that it can soon be effected, and that without danger either to the mother or child, provided the other symptoms be natural. Nay, we read in Moschion, that the best position of the child is, “When
“ it is so born, head foremost, that the head is found
“ directed to the orifice of the matrix, the hands,
“ the sides, and the thighs being joined. Next to
“ this, the most favourable posture, is when it descends with its feet joined and opposed to the ori-

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“ face

“ fice of the matrix, its hands being stretched down
 “ along its sides ^h.”

It is true, when the child is pulled out by the feet, the hands and arms seldom continue stretched down along the sides of the body, but are raised up whilst the trunk of the body passes through the orifice of the womb, so that the arms must afterwards pass through with the head, and thus by their bulk they render it more difficult for the head to pass. Deventerⁱ acknowledges, that all authors require, “ That the arms, “ being successively produced, should be placed near “ the body. However (continues he) I have been “ taught by experience to differ from them in this and “ many other particulars; I therefore with confidence “ advise, that the arms should be left by the head, “ and pushed out together with the head. I own that “ the woman in labour should exert her utmost efforts “ to force out the child, but a bulk so inconsiderable “ will quickly pass, &c.” He then adds what follows: “ I have indeed been always successful by this “ method. This practice I shall adhere to, as it is “ not attended by any danger of pulling the head from “ the shoulders, which has often happened to Paul “ Portaál and others, as they themselves acknowledge: “ nor is this at all to be wondered at; for the arms “ being pulled near to the body, the mouth of the “ womb, contracted and closed like a halter or tenter- “ hook, frequently strangles the child, or, if it be al- “ ready dead or tender, its head is easily pulled off, “ and, remaining in the womb, must be afterwards “ taken out with iron hooks.”

But if the head of the child be of a considerable size, or the child itself brawny, then it is certain that great force must be used to bring out the head along with the shoulders; which does not seem without danger. But when the case is different, this may be attempted. Hence we see, that many very skilful men that have wrote since Deventer, have advised that the arms should be drawn away, till the child is brought out as far as the arm-

^h Harmon. gynæc. pars prior. cap. 2. Spach. gynæc. p. 10. ⁱ Nov. lum. art. obstetric. cap. 40. p. 198.

arm-pits; though they do not affirm that this is always, but very often necessary^k.

But Levret^l has observed, that out of twenty children who are placed obliquely in the womb, there is scarcely one that inclines towards its left side. He however was not able to discover the cause of this.

§. 1321. **T**HIS is done, 1. By putting the mother in a proper situation; and, 2. By changing the position of the infant.

1. The posture of the woman in labour may be considered in two lights: either as it favours natural delivery, that the child may the more easily come out; or whilst, by a change of her posture, art endeavours to correct the disadvantageous position of the womb, or to render it more easy to change the disadvantageous situation of the child. In natural delivery, the posture should be such, that the midwife may use her hands with ease whilst she assists the woman in labour: and that there may be no obstacle whilst the os coccygis is to go back during the passage of the child's head. But as there may be many such postures, different postures are chosen in different places, and women do not easily forsake that which they are accustomed to. Levret^a says, that delivery may be happily effected in almost any posture, if it be completely natural; wherefore the man-midwife should not much mind what posture the woman in labour gives the preference to. Latona, throwing her arms about a palm-tree, placed her knees upon the grass, and was delivered of Phœbus^b. Mauriceau^c has observed, that country-women when in labour chuse this posture; others are desirous of the seat of women in labour, the figure of which is to be seen in Deventer^d. Mauriceau^e approves of womens

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^k Levret, art. des accouch. p. 116. Ciantz. Emleitung in der Hebammenkunst. p. 62. ^l Ibid. p. 105. ^a Levret, art. des accouch. p. 110.

^b Homer. hymn. in Apoll. Spondan. p. 347.

Traite de medec. de femm. gross. liv. 2. chap. 7. p. 244. ^d Nov.

sum. art. obstetric. cap. 26. p. 90. ^e Ibid.

being delivered in bed; and many agree with him herein, because this affords the woman in labour an opportunity of reposing immediately after she is delivered, as there is no occasion for carrying her from the seat to a bed. But the bed was furnished with a proper quantity of linen rags, that the blood and filth might be easily removed. Amongst those who are in good circumstances, it is customary to make two beds contiguous to each other, that, a few hours after delivery, the woman in labour might be conveniently removed to a clean, dry, and warm bed, and might not be forced to lie dirtily for a long time. A hard bed is reckoned beneficial to a woman in labour, lest, in too soft a bed, a hole might be made which might obstruct the backward motion of the os coccygis, and the midwife's manual operations: Therefore Mauriceau^f advises to lay ticken upon the bed, not stuffed with feathers, but with horse-hair. Levret^g recommends the same caution in a difficult delivery, which is to be effected by the hand of the man-midwife; but after delivery, a soft bed is best. Moschion^h has judiciously remarked this, directing that two beds should be made; one of which should be hard, such an one being useful during the lying-in; the other should be soft, to receive the patient after delivery.

It was before observed, that the pregnant womb is extended by slow degrees, and at the same time ascends beyond the limits of the pelvis, into the cavity of the abdomen: but this chiefly obtains in the bottom of the womb, which is its highest part, and when it mounts up to the ventricle, as has been said before. It is easy to conceive, that the womb, being thus distended, can in the abdomen decline towards either side, or fall out before if the abdomen hangs forward, whilst gravid women very injudiciously bind the abdomen with stays, and so obstruct the free ascent of the swelling womb. Levretⁱ admirably remarks, that the bottom of the womb cannot fall back, the column of

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^f Deventer, nov. lum. art. obstetric. cap. 26. p. 90.
des accouch. p. 113.

^h Spach. gynæc. p. 4. n^o 48.

^g L'art
ⁱ L'art.

des accouch. p. 37.

vertebræ which juts out on the inside preventing this: it can therefore happen only when a bad conformation of the back-bone makes the vertebræ of the loins jut forth outwardly. It is at the same time evident, that, the bottom of the womb taking this direction, its orifice inclines towards the opposite part, nor does it directly answer to the vagina, which might give rise to difficult delivery.

It appeared at §. 1290, that this deviation of the womb was known to the ancient physicians, and that they sometimes took it for the cause of the suppression of the courses; when the mouth of the womb did not directly answer to the vagina, but, being placed obliquely, was so pressed to the adjacent parts, that its aperture was either diminished or quite stopped up. We there likewise spoke of the method made use of by Hippocrates to change the disadvantageous position of the orifice of the womb into a natural one. But if the excretion of the monthly courses could be obstructed by this cause, it is evident that delivery may be rendered difficult by it. Moschion^k has also described the various declination of the neck and orifice of the womb; and tells us, that the midwife can examine this with her hand; and enumerates the various symptoms according as the mouth of the womb presses these parts or those. At the same time, it must be acknowledged, that till Deventer wrote of the disadvantageous situation of the womb's orifice as a cause of difficult delivery, few authors or none had touched upon this subject, or discussed it in a manner worthy of its importance; they have scarce done any thing else but speak of the disadvantageous position of the child in the womb, as an unlucky circumstance. Deventer informs us, that he, for this reason, published his work, intitled, *Novum Lumen Obstetricantibus*, "The Midwives
" New Light;" and he complains^l, "That many
" would look upon what he offers as unworthy of credit;
" and that others, addicted to raillery, would
" laugh at it, and reject it as new and false."

The opinion of Deventer has been since confirmed
by

^k Spach. gynæc. p. 18. n^o 141.

^l Deventer, cap. 2. p. 47.

by other excellent authors upon the subject of midwifery; and Levret^m has asserted, that the chief cause of the oblique figure of the womb arises from the place to which the placenta sticks. For though, generally speaking, it grows to the bottom or the hind-part of the womb, it is certain from observations, that the placenta can grow to every part of the womb's cavity, not excepting even the circumference of the womb's orifice. Now as the diameter of the placenta is seven or eight breadths of the thumb, and one breadth of a thumb in thickness, it is self-evident, that the substance of the womb, to which the placenta is joined, must be increased in bulk: wherefore the bottom of the womb, which has its place in the abdomen, will incline to that part to which the placenta is joined, according to the law of gravity; and, at the same time, the neck of the womb and its orifice, will, for the same reason, tend to the part directly opposite. Thus, if the placenta should stick to the lateral part of the right side of the womb, then its bottom will decline toward the right iliac region, but the neck will stay in the opposite part. Hence it appears, that the womb hangs directly over the pelvis then only when the placenta has grown to its bottom or hindmost part, if the body of the pregnant woman be of a right conformation. The same thing will happen if the placenta should grow to the orifice of the womb: which is but rarely the case; and when it proves so, there almost always follows a hæmorrhage of the womb, when the pregnancy is near an end,

Might not Hippocrates mean something of this kind when he said what follows: *If the membranes which should be excluded after the birth should come from the woman, before the child begins to come out, she will be delivered with difficulty, and her danger is the greater if the head does not come out first*ⁿ. For if the placenta, which grows to the orifice of the womb, should
come

^m Traite des accouch. p. 36, et seq.

ⁿ Si cui secundæ pueri in utero exeant, priusquam puer foras prodire incipit, difficile parit; magisque periclitatur, nisi caput precedat. *De superfatat. cap. 1. Charter. Tom. VII. p. 861.*

come out first, there follows a copious and dangerous hæmorrhage: but when the head of the child immediately follows, and stops up the orifice of the womb, there is no passage left for the blood. In the text of Hippocrates, we meet with the word *χαριον*, which signifies the last of those membranes which wrap up the fetus: but Galen^o informs us, that this word likewise means the secundines *τα υστερα*; amongst which the placenta also is comprised.

This declination of the womb may in a pregnant woman be discovered by the sight and touch, whilst the bottom of the womb declining either on one side or the other causes the belly to swell: nay, the pregnant women themselves are accustomed to say, that they carry the fetus on this side or on that, whilst they feel a greater pain occasioned by the compression or the pulling of the neighbouring parts, and feel a greater motion of the fetus in that side towards which the bottom of the womb has declined. It is a great advantage to know these particulars, that afterwards at the time of delivery this may be remedied by changing the posture of the woman in labour. For a difficult delivery must always be expected, if the orifice of the womb does not answer directly to the vagina; nay, delivery will sometimes be altogether impossible, till this position of the bottom of the womb is changed. For if the bottom of the womb should fall down before, the neck and orifice of the womb will make a right angle with the vagina; and the neck of the bladder will be compressed, so that no urine can come out. But how, and by what dexterity of hand, the position of the bottom of the womb can be so changed, that a happy delivery will follow, may be seen in Deventer^p, who has treated copiously of these matters; we may justly add what Levret has said upon the same subjects^q.

2. The child's position is natural when it comes out with its head first, its face looking towards the os sacrum

^o Comment. in Aphor. 49. sect. 5. Charter. Tom. IX. p. 224.

^p Cap. 46. et sequent. p. 201, &c.

^q L'art des accouch.

crum of the mother : but when the child's position in the womb deviates from this natural situation, this should be altered, if possible, as hath been already said ; or if the head should be too far distant from the orifice of the womb, the feet are to be sought out, that, these being caught by a skilful hand, the child may be pulled out. This midwives call " turning the child." It sometimes happens, that children come out by the feet ; sometimes other parts of the body are by the touch perceived at the orifice of the womb.

It is obvious to every body, that it is absolutely necessary that the parts that offer themselves should be distinguished, that the midwife may direct her hand in the womb, whilst she is in search of the feet. But with regard to the dexterity and caution required in order to turn the child with safety, the several authors who have written upon the art of midwifery, and whom we have already cited with approbation, may be consulted ; in particular Levret ^r, where a most accurate description of all particulars is given. For as soon as it is known with certainty, that the child is disadvantageously placed in the womb, and that its orifice is already open, it is most adviseable to attempt turning directly, as it will be a much more difficult matter to effect it after the humours have run out, and the womb is become contracted and dry.

When the child is come into the world, the lying-in woman is not entirely disengaged ; for the membranes which wrapped the child, the navel-string, and the placenta, being grown to the womb, still remain in its cavity : all these things should be removed, that the womb may be able to contract itself, and that the vessels distended with blood may be evacuated, and at last reduced to their proper size. All these parts, taken together, the Greeks called *τα υσερα*, the *secundines*, or *after-birth*, as they have been called by some, as the taking out of these is sometimes attended with considerable trouble ; wherefore much prudence is here required. But as all that goes under the name of *se-*

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secundines can be of no use when the child is brought into the world, many are for having the womb immediately disburthened of this useless luggage. Thus Lauriceau^s directs, that the *secundines* should be taken out with the utmost expedition, even before the tying and cutting of the navel-string, fearing lest the womb should be closed in case of delay. Deventer^t directs, to cut the navel-string first; but, this being one, “the chief care should be to take out the *secundines* without delay.” Nay, if there should be present a woman capable of this, he directs that she should tie and cut off the navel-string, “Whilst the midwife who first received the child in perfect health in her bosom, the umbilical vein not being then bound or cut off, should quickly put in her hand, in order to take out the *secundines*.” He gave the preference to this method; because soon after delivery, the gaping orifice of the womb, and the womb itself, not yet contracted, easily admit the hand of the midwife without there being any occasion for force, and without putting the lying-in woman to any pain. In this manner there was no danger, lest, by drawing the navel-string, the bottom of the womb should be dragged out inverted: at the same time, the connection of the placenta with the womb may be dissolved if it be too strong; and if either a shapeless lump of flesh, or clotted blood, or torn parts of the membranes, should stick to the womb, these may be all insensibly brought out by pulling back the hand, lest they should rot by being left in the womb too long. He likewise thought that he should in this manner have it in his power to restore the crooked womb to its proper situation, so that he did not immediately draw back his hand; or if he did so in pulling out the *secundine*, he then plunged it again into the womb, and waited till the womb was contracted about his hand. He assures us, that this method was always successful.

But others, and those men whose opinion in cases of midwifery is of the highest weight, advise not to be too

^s Traite de malad. de femm. gross. liv. 2. chap. 8. p. 248. ^t Nov. art. obstetric. p. 125. cap. 28.

too hasty; they would rather have the womb, upon the exclusion of the fetus, be a little contracted before any attempt should be made to take out the placenta. This is the advice of the celebrated *Monro*^u; and *Levret*^v, a man of the greatest experience in these matters, gives us to understand, that no attempt should be made to take out the placenta, unless the midwife be certain that it is in such a state that it will come out easily.

It is then thought to be in that state, if before delivery, during delivery, or immediately after the child's coming out of the womb, there flows a quantity of blood from it. For he gives this as a sign that the placenta is, either entirely or in part, freed from its connection with the womb. For though the whole circumference of the chorion is joined to the pregnant womb, and some vessels are plainly perceived to pass from the womb into the chorion; whence, these being broke, whilst the waters bag out, and delivery is near, some blood flows from them, but in a small quantity, as was said before; yet the largest vessels are in that place where the placenta is connected with the womb. If therefore a quantity of blood comes out either before delivery, during delivery, or immediately after delivery, we know that the placenta is at least in part separated from the womb, and that therefore an entire separation may be justly hoped for, if the navel-string be pulled cautiously and gently. But when there does not come out a sufficient quantity of blood, we then know that the placenta still sticks to the womb with its whole surface; and then great caution is required: for by rough handling, the bottom of the womb might not only be turned inside out; but moreover, if the placenta was to come cleverly out, a sudden, copious, and dangerous hæmorrhage, would follow, unless the womb by an immediate contraction should lessen the size of its vessels.

This is the reason of that prudent advice of the celebrated *Levret*^w, that an attempt should not be made to

^u Medical essays and observations, Vol. II. n^o 2. p. 241. ^v L'art des accouch. p. 127, 128. ^w Ibid.

to take out the placenta, till the womb has given signs of contraction. For sometimes the womb, though, disengaged from the fetus which stretched it, sinks down flaccid and heavy, especially after a laborious delivery; and then the whole abdomen is found upon touching to be even, soft, and flaccid: but when the womb is contracted, and diminishes its cavity after delivery, there is felt in the abdomen of the lying-in woman, a swelling, shaped like a pear; tolerably hard and compact; we then know that the womb is greatly contracted, and therefore, the placenta being taken out, there is no fear of an excessive hæmorrhage.

He was therefore for immediately taking out the placenta, if the hæmorrhage shewed that it was prepared for coming out, that the womb, being entirely evacuated, might be the better able to contract itself, and so lessen the hæmorrhage; for the blood grows clotted by delay, and forms great lumps, which are not to be got out without fresh trouble. Nay, if such a lump should stop up the orifice of the womb, and the flaccid womb should not contract itself, the secret hæmorrhage continues, and the whole cavity of the womb is filled with blood, so that the lying-in woman is seized with a violent syncope. If the womb appears large and soft upon touching the abdomen of the lying-in woman, it is a sign she is in that dangerous state; the only remedy is then, by immediately thrusting the hand into the cavity of the womb, to pull out the clotted blood, so that the womb may be able to contract itself, and stop the open vessels.

The very contraction of the womb itself seems to contribute to the separation of the placenta. For as the little lobes of the placenta enter the hollows of the womb's substance, upon the womb's being contracted, they are forced out as it were, and therefore stick to it the less. Ruyfch, examining the structure of the womb, said that it, as well as the bladder, "has a fibrous, thick, and moving substance^x:" but he observes likewise, "that it has its peculiar moving fibres, placed in a circular order, and that in the

^x Advers. anatom. dec. 3. n^o 10. in fine. p. 35.

“ place where the placenta in its natural state joins
 “ the womb; that is, in the bottom of the womb.”
 He drew these fibres^y; but when he afterwards found
 his draught not sufficiently accurate, he in the latter
 part of his life gave another^z. Now he thought that
 that these fibres served principally for the separation
 and exclusion of the placenta. But as he met with
 those fibres only about the bottom of the womb, and
 well knew that the placenta does not always stick to
 the same place, he concluded that the placenta would
 with more difficulty be separated if it was situated
 without the sphere of this muscle’s activity.

It seems reasonable hence to conclude, that the placenta should be taken out immediately when the blood runs out copiously after delivery; for then it generally comes out with ease, as it is in part disengaged from its cohesion with the womb: but when the case is different, and the womb has given no signs of its contraction, then it is proper to wait; but force ought never to be used. Ruysch^a lamented, that, after having practised midwifery during fifty years, he had seen many women, healthy and chearful after a happy delivery, die, because the placenta was roughly pulled out. Hippocrates^b, in case the secundines do not easily come out, expressly advises, “ That it
 “ should be done gradually and not by force, lest any
 “ thing being torn and pulled in an unnatural man-
 “ ner, should cause an inflammation.” He advised to attempt getting out the placenta merely by the weight of the child, and that in as gentle a manner as possible. *Therefore, (says he) fresh wool should be heaped up under the fœtus as high as possible, which may yield by degrees; or the wool should be laid over two leather bottles full of water, and the fœtus should be placed over the wool; then a hole should be made in each bottle, that the water may run out insensibly; then the water running out, the leather bottles should be let down; these being let down, the fœtus draws the navel, the navel draws the secundines, &c. in the same manner, the*
 navel

^y Tab. 3. fig. 1.^z Tractat. Anat. p. 9.^a Ibid. p. 11.^b De Superfecundat. cap. 3. Charter. Tom. VII. p. 862.

navel being either broke off, or cut off before the time, the secundines should be got out by hanging on proper weights. This method is by much the best, and the least dangerous^c.

Though this method of taking out the placenta is not now made use of, as the same end may be compassed by pulling the navel-string with a prudent hand; yet it shews that Hippocrates entirely disapproved of using force upon this occasion.

What we read in Moschion^d is admirable; especially if we add to it what the Latin translation contains, taken from the book called, a Treatise upon the Matrix^e, which tells us what is to be done if the secundines should stay in the womb. As better advice cannot be given upon this subject, the passage at full length will doubtless be acceptable to the reader.

When the child comes into the hands of the midwife, if it sticks at the navel, the midwife should try, by gently moving it this way and that, whether it can be brought out by the navel of the child, the woman in labour helping it all she can by her own efforts; which should be done when the child does not stick to the bottom of the womb. She should not make direct efforts, lest the matrix itself should be brought out. But if this should prove too slow, the navel being cut, the child should be separated, and another woman should take it, and she herself should hold the rest; and when the matrix opens, should pull; but when it shuts, should make no effort. But if what is broken or cut, should immediately hide itself within, the orifice of the matrix being open, the midwife should thrust

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^c Supponendæ itaque fœtui lanæ, quam maxime sublata, recens carpæ, quo paulatim cedant; aut utriculi duo copulati, aqua pleni, supra quos lanæ imponendæ, et supra lanas fœtus collocandus; deinde uterque utriculus stilo pungendus, quo sensim aqua defluat; effluente vero aqua, utres demittantur ac confidant: his autem demissis, fœtus umbilicum attrahit, umbilicus vero secundas extrahit, &c. ad eundem quoque modum, abrupto aut ante tempus abscisso umbilico, convenientibus appensis ponderibus, secundarumeductio molienda. Hæc enim istorum est optima curatio, et minime lædit. *Ibid.*

^d Spach. Gynæc. p. 4. n^o 53, 54.

^e Harmon. Gynæc. part.

prior. cap. 14. n^o 7. p. 13.

“ in her hand anointed all over; and if they have
 “ sunk to the bottom of the matrix, and are wrapped
 “ up and swim, she should take hold of them by any
 “ part and pull them out. But if they are still held
 “ at the bottom of the matrix, the midwife should
 “ open her fingers there, and catch hold of the
 “ secundines, and, having tried this way and that,
 “ pull them out. Those who foolishly make a direct
 “ effort, often bring out the matrix at the same time.
 “ But if the secundines do not follow even so, or if
 “ the orifice of the matrix immediately closes, so that
 “ the hands can neither enter it nor they come out,
 “ and if a heat should follow, then use should be
 “ made of all sorts of juices, baths, cataplasms, steams,
 “ and every thing that can raise a heat: For by this
 “ care all tightness being relaxed, whatever remains
 “ in the womb and does not belong to it is thrown
 “ out and falls of itself.” It is evident, that by a
 heat (ῥεῖσιν,) inflammation is here understood. He there-
 fore censures other methods used for the expulsion of
 the secundines^f: “ They prescribed sternutations,
 “ suspensions, and potions, to throw them out; they
 “ fumigated; and they had recourse to suppositories,
 “ which draw the blood. They moreover hung
 “ weights to the bag itself; all which remedies we
 “ disapprove of, as they may increase the heat of the
 “ parts and the flux of the blood, without relaxing.”
 But though Mauriceau^g would by all means have the
 placenta taken out, and that as expeditiously as pos-
 sible, as he apprehended that the death of the lying-
 in woman might be the consequence of its being left
 behind; yet he earnestly advises midwives to be very
 cautious in attempting this, and not to use any consi-
 derable force in dilating the mouth of the womb, as-
 firming that it is better, in case any part of the pla-
 centa should remain, to leave it, rather than hurt the
 substance of the womb. Nay, he directs us to leave
 the whole business to nature, if violence should be ne-
 cessary in order to bring out the placenta; and in that
 case

^f Ibid. n^o 9. p. 13, 14.
 liv. 2. chap. 9. p. 252, et seq.

^g Traite des malad. de femm. gross.

in case he recommends the injection of emollient decoctions into the womb, that the orifice of the womb may be softened, and that, a suppuration coming on, the placenta may be separated from its cohesion with the womb. This being done, he advises to give the patient a clyster with pretty strong ingredients, that the placenta may come out with the efforts to stool: this has often happened; nay, it has sometimes come out of its own accord, without the knowledge of the patient. Therefore Ruysch^h is justly against all violence, in case the placenta should stick too close; he is likewise against dilating the mouth of the womb, and advises to leave the patient to her repose. For the mouth of the womb will be relaxed of its own accord, and the placenta will come out in a few hours: nor did he apprehend that putrefaction would be the consequence of leaving the placenta any time, as he had never seen an instance of it. For he informs us, That “during the space of upwards of fifty years that he had been a professor of midwifery, no lying-in woman ever died by a retention of the placenta, without having by too violent efforts endeavoured to get it out bit by bit.” He adds, that he has often known the placenta to be retained for days, weeks, nay even for months together, and then happily got out.

Nor do country-men, and those that have the care of cattle, imagine that a cow’s death will be the consequence of the retention of the secundinesⁱ. On the contrary, it has been a constant rule with them to leave the secundines in, if they do not come out along with the calf; and then they generally come out of themselves nine days after. But if they were pulled out immediately after delivery, a suppuration of the womb would often be the consequence^k.

Brudenell Exton^l, a person of great experience in midwifery, remarks, that the secundines generally follow ten, fifteen, or twenty minutes after delivery; and that there is not often occasion to separate them by

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thrust-

^h Traſtat. anatom. p. 13. ⁱ Ibid. p. 16. ^k Verhande ing
van de ziekte en ſterfte van het Rundvee, p. 62. ^l Sect. vii. p. 233.

thrusting the hand into the womb, as they generally follow upon gently pulling the navel-string. He likewise acknowledges, that the orifice of the womb can be as easily dilated a few hours after delivery as before: he confesses, that if any part of the secundines be left in the womb (if a great hæmorrhage does not follow), it generally comes out of itself in a day or two; and that without any injury to the lying-in woman. He however advises, for the sake of the midwife's reputation, that the secundines should be taken out entirely before she quits the lying-in woman; for he adds this reason, "in order to avoid reflections." For the same reason he is against leaving the placenta in too long, as it may otherwise be retained for some days. Not that he fears any very bad consequence from this; for he adds what follows: "If the womb should by any accident be inflamed, and the lying-in woman should die, the blame would be laid on the midwife for having left in the secundines."

From what has been said, it is evident, that the ill consequences that attend the retention of the secundines, often proceed from the rough methods of the midwives, who are tender of their reputation; for they think it a shame to leave the patient without completing their work, and for this reason stick at no bold attempt whatever. It was said by Hippocrates, *At the coming out of the secundines, the nostrils and mouth should be compressed by the administration of a sternutatory^m*. But this gives rise to a great concussion of the whole body, and chiefly of the abdomen. Can it be thought safe to agitate the womb so strongly by sternutatories and compression, when it has suffered so much during delivery? Are not worse consequences to be apprehended from thence than from the too long retention of the secundines? It is no great wonder if, after having made these attempts though to no purpose, there should follow pains in the abdomen, cold fits, and fevers. Thus we elsewhere read, *When the*
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^m Ad secundarum elapsum, sternutatorio admoto, nares et os comprimere oportet. *Aphor.* 49. sect. 5. *Charter.* Tom. IX. p. 224, et *Hippid.* lib. 1. in fine, *ibid.* p. 288.

Secundines do not come out immediately after delivery, rains in the lower belly and fevers arise from inanition; but if the secundines come out, the woman recovers. They generally rot; however, on the sixth or seventh day, or even later, they come out^a. However, that this rotting of the secundines which he takes notice of is not very dangerous, is evident from another place: If the secundines should be left in a woman, unless the womb's mouth be large, her courses are less frequent than necessary; the belly becomes hard and big; cold, an acute fever, and pain, seize upon the whole body, especially that part of the belly which is below the navel; and a weight and pangs are felt in the belly just as if the fetus was there. The woman being taken proper care of, soon throws out the rotten secundines, and recovers^o. It is no wonder, that, when the secundines are left in, the courses are not frequent, as the placenta is connected to the womb by the largest blood-vessels, upon the loosening of which, blood flows copiously. It is evident from another passage of Hippocrates, that he expected the expulsion of the retained secundines from the strength of the womb alone: When a woman bears a fetus, of a month or two months old, which putrefies, and the secundines cannot come out, and she herself be thin, her body must be purged and rendered of good case. For putrefied fetuses do not come out, except the wombs are strong and well-conditioned^p. It is well known, that the secundines are with more difficulty taken out when a woman miscarries, especially if the woman has been pregnant only a few months; so that they are

^a Quum secundæ statim a partu non secesserint, imi ventris dolores in materum inanitate suboriuntur ac febres: quod si secundæ secesserint, mulier etiam sanescit. Plerumque vero putrescunt; sexto vero aut septimo die, aut etiam posterius, secedunt. *Ibid.*

^o Si mulieri secundæ relictæ fuerint, nisi uteri amplo ore fuerint, partior quam conveniat purgatio prodit, venter durus et magnus evadit, frigus detinet et febres acuta et dolor totum corpus, præcipue vero ventris partem umbilico inferiorem, pondusque in utero ac tormina, ac si fetus existat sentiuntur. Et curata secundas brevi putrefactas ejicit, et sana evadit. *Ibid. cap. 53. p. 758.*

^p Quum vero in utero gerens foetum menstruum aut bimestrem corruerit, et secundæ exire nequeant, ipsa autem tenuis sit, hujus corpus tunc purgare, et opimum reddere oportet. Non enim prius putrefacti foetus exeunt, nisi uteri robusti et bene compacti fuerint. *Ibid. cap. 52. p. 757.*

oftener left in the womb when a woman miscarries, than when she is delivered according to nature.

From what has been said, it is evident, that the secundines should be taken out, that a woman who is brought to bed may be entirely disengaged. And they should be taken out directly, if there should be a considerable hæmorrhage, as delays are then dangerous: but in that case, the placenta follows more easily, as it is in part loosed from the womb; but if it does not, we should wait till the womb has given signs of its contraction; which may be known by touching the abdomen, as was said before. But no force should be used, whether the orifice of the womb be closed up very fast, or the placenta does not stick fast enough; as much worse consequences are to be apprehended from that violence than from the placenta's being left in a considerable time, since it always comes out sooner or later of itself. *Ægineta*^a, after having enumerated all things preparatory to the taking out of the placenta, tells us, "That if they cannot be got out even so, it is not adviseable to have recourse to violence; for after a few days, they being rotten and turned to corruption drop out of themselves." But in the mean time he apprehended the consequences of the bad smell, which might fill the head, and disorder the stomach; which evil he directs us to remedy by fumigations. However, the retained placenta does not always putrefy to such a degree: I have seen it come out entire in three days time, whilst the lying-in woman made water; nor did I find it rotten, and the patient recovered happily, though a whole family of the first distinction was highly offended with me for preventing the midwife's using violence in order to get out the placenta.

As it is customary for matrons to examine the secundines attentively after they are brought out, and as they are filled with most terrible apprehensions if there be the slightest suspicion of any particle of the membranes or the placenta being still left in the womb; I have always endeavoured to ease them of their scruples

^a Lib. vi. chap. 75. p. 93.

les as much as possible; and if I suspected any thing of the kind, I concealed it with care, lest the lying-in woman should be made uneasy by such intelligence, or the midwife's reputation should be in jeopardy. For any ill accident that afterwards happens during delivery, is usually attributed to this neglect. Whence there is reason to fear, lest midwives should afterwards hurt the womb by cleansing it too much. Levret^r, so much celebrated for his skill in midwifery, has remarked, that the surface of the womb in that part to which the placenta stuck, is raised into crista of a considerable magnitude, which may pass upon the midwife for the remains of the placenta; by tearing away which, they may tear the very substance of the uterus. Sure I am, that such remains will afterwards come out of themselves, together with other evacuations; nor do they hurt the lying-in woman: though they are of dangerous consequence to the midwife's reputation, which a humane physician will always endeavour to preserve. Nor is there any danger from the putrefaction of the parts left behind, as the consequences can be easily prevented by washing the womb in a proper manner, as will be shewn in the next chapter.

The passages relating to the taking out of the placenta, which we meet with in the same place^s, are well worth reading; for all things requisite for this purpose are there described.

Though the placenta generally sticks to the bottom of the womb, yet it is most certain that it is sometimes fixed to other places: and then the womb sometimes contracts itself unequally, retains the placenta as it were in the peculiar cavity^t of its substance, and is with difficulty pulled out. Peu^u took notice of this, and looked upon such a cell as a sort of a second womb in which the placenta is contained; a cell, whose orifice is not unlike that of the womb itself, having margins, thick, narrow, and hard, but smooth at

^r Mem. de l'Acad. de Chirurg. Tom. III. p. 229. ^s Pag 216,—
^t Ibid. p. 22, et l'Art. des Accouch. p. 131, 132.
 Pratique des accouch. liv. i. chap. 4. p. 35.

at the same time; he generally found this cell, when there was such an one, in the right side of the womb, and very seldom in the left. Denys ^v, celebrated for his skill in midwifery, has with great exactness described that unequal contraction of the womb, by which the placenta was retained. He was called to a woman who lay in for the first time, and had four hours before been delivered of a child; but the navel-string was broke, nor could the midwife by any sort of effort pull the placenta out. She imagined that she touched the placenta; but upon an accurate examination, she found that it was the mouth of the womb, which seemed upon touching to be very soft, thick, and broad: having thrust her hand into the cavity of the womb, she found no traces of the placenta. Denys was therefore called to her assistance; who, having thrust his hand into the vagina, thought likewise that he felt the placenta coming out of the orifice of the womb: the orifice of the womb equalled a man's fist in bigness, being four fingers breadth wide, and the breadth of a thumb thick: he could easily get in his hand; but though he searched the cavity of the womb with his fingers on every side, he could not find the placenta, at which he was very much surpris'd. At length, having a second time thrust his hand into the womb, he found a hole, which could scarce give entrance to the tip of the little finger; from whence he inferred that the womb was pierced. This hole he wisely dilated with the fore-fingers, but soon after the blood burst out; and touching something soft with his finger, he thought he touched the intestines: he then put in the second finger with the fore-finger, and perceived that the placenta lay hid in this place: this done, he also put in his thumb; and thus he by degrees, but not without trouble, separated the placenta from the womb, and pulled it out when separated.

This woman suffered no extraordinary pain afterwards, but recovered perfectly.

It is evident that such a case as this is perplexing, and

^v Verhand. over het. Ampt der Vroed-Meesters, &c. cap. 3. p. 31.

and requires the expert hand of a skilful midwife. Is there not room for hopes that such a particular closing of the womb as that by which the placenta is shut up in a sort of cavity peculiar to itself, will cease? Crantz^w has remarked, that if in such a case, whilst the hand of the midwife is in the cavity of the womb, the woman in labour feels new pains, then that sack in which the placenta stuck is opened, and as it were vanishes, and the placenta then easily follows.

Every thing being thus got out of the womb, a soft linen cloth, folded four times, is applied to the privy parts, in order to keep off the cold air, which is very dangerous.

Of the DISEASES of CHILDBED.

1322. **A** LYING-IN woman is seized with weakness, a syncope, and convulsions, immediately after delivery; because the arterial blood is driven from the cerebrum and cerebellum into the lax vessels of the abdomen: she is also seized with after-pains, arising either from her labour, or a contusion of the parts, a retention of blood or of the secundines, or from another foetus.

We come now to treat of those diseases which succeed delivery, and which proceed from delivery as their cause; to which class, likewise, may be reduced those which owe their origin to the pains suffered during delivery. For a woman during her lying-in may be seized with other diseases, as for example, such as are epidemical, and others which we shall not here treat of: if such should happen to occur during the time of a delivery, the physician in treating them should always attend to the exigencies which happen every delivery.

To proceed orderly, we must consider those changes

^w Habammenkunst. cap. 9. p. 150.

ges which necessarily follow when the fetus and the placenta are extracted. Before delivery, the distended uterus changed the situation of the intestines; pressed all the adjacent parts; made the vessels, especially those of the nature of veins, more narrow than before; hindered the free action of the diaphragm and extended the muscles and teguments of the abdomen. Upon the womb's being evacuated, all these symptoms cease: the pendulous viscera of the abdomen recover their natural situation; the neighbouring venous vessels, so often swollen in pregnant women, quickly send back the retained blood to the heart, so as sometimes almost to overwhelm the right side of the heart; the arterial vessels, being now free from pressure, more easily admit the blood that is forced out of the heart, which they pour into the veins now disengaged likewise. The abdominal muscles had lost their strength, by being continually kept stretched; the pendulous and flaccid coverings no longer resist, (see §. 25, n^o 3.): after the separation of the placenta from the womb, the great vessels of the womb being open, pour forth blood copiously. All these causes concurring, contribute to produce faintness and a syncope immediately after delivery. For almost all the blood tends towards the lower vessels of the body, now lax and wide open, so that but a small quantity comes to the brain and the cerebellum. For this reason, that period of a woman's lying-in, which immediately follows delivery, is reckoned the most dangerous; and if the womb did not make its own vessels narrow by squeezing them, there would be still greater danger. For this reason, the skilful in midwifery, as has been said already, advise not to loose the placenta from the womb, till it is certain that the womb contracts itself. This likewise is the reason they are so full of apprehensions, if the womb, now become quite empty and flaccid, floats in the abdomen, nor is found upon touching to be contracted into a globe. For then lying-in women run with blood, and, by the sudden inanition of the vessels, die in convulsions; pretty nearly in the same manner that the strongest ani-

animals, when their arteries are cut open by the butcher, their blood being entirely exhausted, are seized with violent convulsions before they die. For the same reason there is some suspicion of danger in a too easy delivery; when the fetus, with one effort, forces its way out, together with the humours which burst forth; or when, being shut up in the membranes still entire, it comes out along with the placenta. There was then no time left for the womb to contract itself. But when the fetus follows a short time after the humours are burst forth, then it has contracted itself already, and has on every side applied itself to the body of the fetus. This is known to those who do the office of midwife, while with their hands they turn the child on account of its disadvantageous position, that there may be an opportunity of taking it out by the feet. Such a misfortune is chiefly to be apprehended in those women, who, being of a delicate constitution, have lived in luxury and ease, and whose monthly courses are generally considerable. Many such melancholy cases are to be met with in authors, which it would be here superfluous to relate. Hippocrates^a seems to have this in view, when he says: *Delivery is often succeeded by troublesome relaxations which disturb the mind, but which are not very dangerous. They also indicate that the courses are copious.* He seems only to have hinted at a slighter degree of this disorder, namely, the actions of the brain being disturbed, but inconsiderably. For the word *καταρρησια* denotes only a slight emotion of the mind; nor does he make mention of weakness, syncope, and convulsions. But he takes notice that such women have copious courses; for the word *λυναιχεια* in the works of Hippocrates signifies both the monthly courses and the evacuations after delivery: and this is true in both cases; for such feeble and delicate women are in use to flood both with their monthly courses, and with the lochia in childbed.

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With

^a Cum torpore exsolutiones, difficiles quidem ex partibus contingunt, mentem emoventes, non tamen perniciosæ. Sed et mensium copiam æ significant. *Coac. Prænot. n° 456. Charter. Tom. VIII. p. 884.*

With after-pains, arising either from the fatigue of labour, &c.] Nobody that never was a witness of it will easily believe with what force a woman in labour exerts herself, especially in her last efforts. With her hands she strongly grasps the bed or the by-standers; she presses a stool placed under her feet, and thus she tires the strongest women that attend her. Sometimes the bones of the pelvis retire from each other in a difficult delivery, as was said in the foregoing chapter. But what a force must be required to bring this about. Hence, though they upon delivery find themselves greatly lightened, and with joy declare that they find themselves perfectly well upon being freed from this burden, they notwithstanding, the next day, feel all their limbs ache, and complain of a general lassitude of the whole body.

Or a contusion of the parts.] The whole cavity of the bones of the pelvis is covered with soft teguments, which, whilst the fetus is forced out by strong efforts, are pressed and bruised against the hard bones. The vagina is sometimes observed to swell, but with a gentle tumour, towards the latter end of a pregnancy: sometimes the lips of the pudenda swell: sometimes it happens that the head of the child, if it be of the larger size, or comes out with a sudden effort, tears the perinæum as far as the anus. But inflammation, and all its effects, may be the consequences of a violent contusion. If the head of the fetus long sticks without motion in its passage, a gangrene of the soft parts is the consequence of that lasting compression^b; and afterwards, if such women escape, gangrenous crusts fall from them, being occasioned by the suppuration made in the passage: sometimes the rectum itself, and the bladder, are seized with a gangrene, occasioned by the lasting and continual pressure; from whence dreadful, and sometimes incurable disorders arise.

Whether, after delivery, when the distended abdomen is evacuated, do convulsive motions of the muscles of the abdomen succeeding, cause pain? I have

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^b Levret, l'art des accouch. p. 169.

sometimes, but not often, heard lying-in women complain of this. In an illustrious matron, who had been delivered of sixteen children, and who was well in all other respects, such cramps of the abdomen were frequently observed during the remainder of her life. John Storck^c, famous for his long practice, the offices he had filled, and his writings, in giving an exact description of the disease of which he died, takes notice, that having evacuated the abdomen by an incision made in the swelled navel, he felt in the abdominal muscles a troublesome, though not a painful, cramp or spasm, which he compares to the uneasy sensation which women just after delivery feel from the same cause.

From another fetus:] Which then requires fresh labour, and may irritate the parts already affected with pain; yet it generally comes out expeditiously enough, the passages being already open.

A retention of the blood, &c.] After delivery, the whole surface of the womb is moist with blood, and especially that part to which the placenta stuck: meanwhile, the orifice of the womb becomes more narrow, and is sometimes totally closed; though generally breaking it may, during several hours, be dilated with ease by the finger of the midwife, as was said in the preceding paragraph. After the separation of the placenta, the blood runs out copiously, but its quantity soon diminished, and it flows from the whole cavity of the womb much less abundantly, continues there, and becomes clotted; and whilst such lumps of blood, the womb being contracted, pass through its orifice, new pains and efforts to exclusion arise, which, as they follow after the exclusion of the fetus, are commonly called the latter-pains, which are sometimes very troublesome, and cause great uneasiness to the lying-in woman, when she thinks all her sufferings over. It was before said, that the pains of delivery begin at the orifice of the womb; so that the skilful midwife, upon perceiving a sort of contraction in the orifice of the womb, accompanied with a tremulous motion,

should admonish the woman in labour to promote to her utmost the effort to delivery, which will immediately follow; in case all things necessary to natural delivery are prepared. But after delivery, that easiness of the womb's orifice to be irritated still continues; whence, when a lump of clotted blood is dashed against the orifice of the womb, and thus irritates it, the whole womb is excessively contracted, and thus forces that clotted blood out.

In many I have seen this blood, not yet clotted, excite those pains and efforts whilst passing through the mouth of the womb. It was already said at §. 1308. that whilst a dangerous hæmorrhage makes it necessary that the fetus should be pulled out, the pains of delivery ought, if not already come, to be excited by a gentle and prudent dilatation of the womb; and ought to be increased, if they are come. Hence appears the reason of those pains which follow after delivery on account of blood retained.

These efforts are sometimes considerable. Ruysch^d makes the following observations: "I look upon it as absolutely certain, that the womb moves itself considerably in delivery, and that all the natural efforts to delivery proceed from the womb; which efforts, after delivery, frequently last so long, that the womb, turning itself inside out, falls down from the body. In other lying-in women, I have, a few hours after delivery, found by experience, that the motion of the womb was so discernable, that the midwives and even the lying-in women often told me that there was still another fetus in the womb." He acknowledges, that, having touched the abdomen of the lying-in woman with his hand, he so plainly perceived that motion, that, if he had not had a great deal of experience, he might have been easily deceived by it.

Sometimes that contraction of the womb is of such force as to squeeze whatever is fluid out of a lump of clotted blood, and condenses it into a sort of fleshy mass of a reasonable firmness, which often has the figure

^d Observat. Anatom. Chirurg. n^o 93. p. 86, 87.

ure of the internal cavity of the uterus, and afterwards is driven out sooner or later, and often passes for the *mola*, a fleshy and sometimes a spongy substance that is præternaturally brought into the world instead of the fetus: this mass being driven out, the blood again flows from the womb, and a new lump of blood is formed which is condensed in the same manner. I have sometimes known three successive lumps come out of a lying-in woman; but the second was in size inferior to the first, and the third to the second, and all had the figure of the womb's cavity, being the less, in proportion as the womb, become more contracted, diminished its cavity. Ruysch^e has given us the figures of such lumps, and takes notice that something analogous to membranes is sometimes found hanging to them. It is known however, that such membranes may be formed out of blood, and that such swim upon the water after a person has been bled in the foot.

It is evident that pains of the same nature may be occasioned by the secundines remaining in the womb; which subject has been treated of under the foregoing aphorism.

. 1323. **S**WATHING the relaxed abdomen removes the first-mentioned complaints (§. 1322.) Another fetus, parts of the secundines, and grumes of blood, should be taken out with the hand.

It has been before remarked at §. 1240, where we treated of the perforation of the abdomen and the chest, that water was not formerly all at once drawn from persons in a dropsy, but at several different times; because it had been observed, that fainting fits, syncopes, and even death itself, often followed, if the abdomen, swelled with gathered water, was entirely evacuated. The reason was then assigned, namely, because the blood might rush into the relaxed viscera and vessels of the abdomen, and so be kept

from the brain and the cerebellum: at the same time there was some danger lest the vessels and viscera, after having been long consumed in this watery filth, might be burst by the blood's suddenly rushing upon them. But when the abdomen was insensibly bound harder and harder with a proper ligature, according as the blood run out, it appeared from numerous experiments, that all the water might be drawn at once from a person in a dropsy, and that this was neither followed by fainting nor syncope.

Now this likewise obtains after delivery, therefore the same caution is to be observed. It should be taken into consideration however, that after such vigorous efforts, especially in a difficult delivery, the abdomen, being as it were bruised, feels a sort of dead pain, and that the uterus itself is affected in the same manner. So that the close constriction of the abdomen may here be hurtful, as Mauriceau justly observes ^a. He therefore advises to apply the ligature in such a manner, that it may strengthen and support the relaxed abdomen, but not so as to press it too hard. He directs to apply a large square cloth to the whole abdomen, and then to bind it by a moderate ligature. The little treatise written by the celebrated De Gorter ^b, in Dutch, upon the binding of the abdomen, is worth reading; he wrote it in order to decry the pernicious method, in use with women who attend those that lie in, of binding them with a girdle or narrow band about the waist, and that very strongly; for foolish old women never act more absurdly than in their attendance upon women in labour. He always saw excellent effects follow from binding the abdomen immediately after delivery with a broad swathe, a table-cloth, or a napkin; and if in a few hours, the swelling of the abdomen beginning to subside, the cloth should begin to stick loosely, it should be gently brought nearer to the abdomen, particular care being taken to avoid a strong compression. He observed that this method diminished the pains which
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^a Malad. de femm. accouch. Tom. I. liv. 3. chap. 2. p. 376, 377.

^b Van de Sluitband, &c.

unassisted delivery, and made less clotted blood be gathered in the womb. He perceived likewise, that during delivery the patient went more easily to stool; when, otherwise, hard excrements in the colon, which is easily widened, gather to a considerable quantity, which afterwards is not without great pain and difficulty purged off by the anus ^c.—That

Another fetus should be taken out], is self-evident; and the cautions to be observed in such a case, are to be met with in all the authors who have wrote upon the subject of midwifery, whom we have already cited with approbation.

Particles of the secundines and grumes of blood, should be taken out with the hand.] This subject was treated of at §. 1321. We are advised to pull these out with the hand, because some physicians have made a practice of giving medicines calculated to throw them out, if there be the slightest suspicion of their lying hid in the cavity of the womb: this method is certainly dangerous, as all these remedies are hot and stimulating, and very improper for women who have been just delivered. They should therefore be rather taken out with the hand, if the orifice of the womb be still open, or can be dilated without violence; that whatever clotted blood there be in the womb, may come out with ease. Moschion directs, that the patient “ should lie down and keep her feet at a proper distance, that whatever is disposed to come out may have free passage ^d;” lest, if the thighs should be kept close, the vagina should be filled with clots of blood, and the discharge of the lochia should by this means be obstructed.

But if these things cannot conveniently be got out, there is some reason to fear lest they should rot, and so prove hurtful to the womb; or that, the putrefaction being sucked in, a fever should ensue before they come out of themselves. Recolin ^e, a worthy member of the academy of surgery, in a case of this nature

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^c Ibid. p. 36, et seq. ^d Spach. Gynæc. p. 5. n^o 55. Harm. Gynæc. part. prior. cap. 17. p. 14. ^e Acad. de Chirurg. Tom. III. p. 202, et seq.

attempted to inject the cavity of the womb with hot water, by means of a syphon; which seems to be both safe and advantageous, as it is attended with no violence. This method was generally successful, as is evident from the cases there related. It is true indeed, this injection of warm water was made upon women who had miscarried, as in cases of this nature the placenta is often retained, and it is so tender, that the part which comes out of the orifice of the womb would be immediately broken off if any attempt was made to pull it out. But there seems to be no reason why this should not be attempted, if after delivery any part of the placenta or any clotted blood should be retained in the womb. Warm water softens and dissolves, and it may reasonably be hoped that what is retained may thus be washed away: but if it does not come out immediately, this advantage at least arises from thence, the putrefaction is thus washed away, and that renders the continuance of the clotted blood, &c. in the womb less dangerous. This injection may be reiterated with safety, and is always to be preferred to dilating the womb by violence.

Hippocrates seems to have made use of an injection of this kind when the womb was full of matter, and barrenness was the consequence: *For matter destroys and corrupts generation. For this reason it is necessary to purge the womb of matter, and remove its swelling*^f. He afterwards adds: *Wombs are to be cleansed in this manner; inject them with mare's milk boiled, and transmitted through a bag of the purest and cleanest linen, having made a proper clyster of it*^g. In this manner the thinnest serous part of mare's milk, passing thro' the bag, cleansed the womb. But that Hippocrates was for having this serum injected, not into the vagina, but into the womb itself, is evident from hence, that in the womb was that purulent swelling, the clean-

^f Nam pus genituram enecat et corrumpit. Ac proinde pus ex utero expurgare oportet, et uteri tuberculum tollere. *De infæcundis, cap. 10. Charter. Tom. VII. p. 850.*

^g Et uteri hoc modo colluendi, lac equinum coctum per sacculum tenuissimum et purissimum transmissum infundito, idoneo clystere facto. *Ibid.*

leaning and cure of which he undertook. This is moreover confirmed by the description he gives of the particular sort of syphon which was to be used in the injection, and which he thus describes: "Let the top of the clyster be smooth, like the silver top of a probe; above this let a hole be bored, a small space being left between. Let there be also other holes both on this side and that, equally distant from each other, equal on their oblique lateral part, not wide but narrow. Let the top of the clyster be solid, and all the remainder hollow like a pipe; to this the bladder of a sow, properly softened with warm water and moistened, should be tied; when you have tied it on, pour milk into the bladder, and stop the hole with a thin piece of linen, to prevent the milk from running out. After you have stopped up the bladder, give it bound to the woman whom you are to wash with the clyster; and let her, having opened it, put it into her womb. She will herself know where it is proper to put it in. Then let her press the bladder with her hand, till all the matter has run out: Which will plainly appear from the matter's no longer coming out with the milk; and it is evident, that when there is no more matter in, it is time to desist." As the intention of Hippocrates was to clear the cavity of the womb from matter by washing it, he for that reason directed that the lateral part of the tube should be bored with several holes. But as Recolin, by the injection of warm water into the cavity of the womb, attempted to dissolve and divide the lumps of clotted blood, and by the quantity and force of the water to divide the placenta if it happened still to stick in any part of the womb, he for this reason justly took care that the syphon should have but one large hole in the top, and none in the lateral part.

There occur other passages in Hippocrates, which prove that he made a practice of injecting the womb; but as these are not altogether conclusive, the passage last cited may suffice.

§. 1324. **T**HE after-pains are removed by opiates, antacids, cardiacs, diluents, and anodyne fomentations externally applied.

The pains which succeed delivery, and are occasioned by the causes enumerated at §. 1322, are sometimes troublesome enough. The juice of poppies thickened, which is sold in the shops by the name of opium, and likewise its several preparations and the medicines compounded of it, are recommended by many as highly efficacious in allaying these pains. However, the use of them is not universally approved of. Some, and those men of great skill in midwifery^a, have spoken against the use of opium and its several preparations.

But if we with attention, and a mind free from prejudice, weigh those symptoms which are observed immediately after delivery, it does not seem that the use of them ought entirely to be rejected. In the last efforts of delivery, especially there was a violent agitation of the whole body, the lying-in woman is filled with dread, both on her own account, and that of her offspring, and often with too great pusillanimity thought herself upon the point of death. It is true, after delivery, these symptoms are sometimes diminished, though they do not entirely cease. The womb, which was obliged to make a great effort in order to force out the fetus, is not at rest immediately after delivery; but continues to be very much agitated, as was observed at §. 1322, from the remarks of Ruysch. Those violent efforts of the woman in labour, whilst the midwife and the by-standers cry out to her to exert herself to the utmost, to use all her force if she has a mind to preserve herself as well as her offspring, continue longer than one would be apt to imagine. I saw a man just drowning, grasp a stick strongly in his hand; being taken out of the water, and put into a warm bed, he could not change the posture of his hand, and the by-standers might sooner have broken his fingers than

^a Levret, l'art des accouch. p. 138.

man have altered it; about an hour afterwards, this convulsion ceased. It has been observed, that the orifice of the womb is often closed fast in lying-in women, so that it cannot be opened in order to take out the clotted blood, or the remains of the secundines, without violence. Prudent physicians, in such a case, usually wait till that convulsive contraction is either diminished or has ceased.

In this case I have seen all the above-mentioned pains subside by opium, prudently administered; and, after a quiet sleep, all those lumps of clotted blood have come out of themselves, and without any trouble. I will freely acknowledge, that I have always prescribed opium after delivery; nor did I ever repent of so doing, as I can solemnly testify, that I never knew any mischief occasioned by it.

I however made use of opium simply cleansed; and administered it, in a moderate dose, at several different times, till the desired repose followed, by which the lying-in women were restored in a most extraordinary manner. But caution is here required; as physicians observe, that a different quantity is required to produce an effect upon different women. No danger need be apprehended in a grown woman from half a grain, and the dose may be repeated as occasion requires. Hence a few grains of opium are diluted in a mixture or potion, which is given by spoonfuls; or these are cruised with absorbing powders, and given to the patient in reiterated doses. Prescriptions are to be found for this purpose in the *Materia Medica*, according to which many such remedies may be compounded.

I however always abstained from compound opiates, as the *Theriaca Andromachi*, the *Mithridatium* of *Dioscorides*, the *Philonium Mesues*, and such like: partly, because they are taken at a single dose; partly because they contain warm odoriferous spices, and the administering of these is not free from danger, as in them the quantity of opium is so different, though they are all recommended alike. For the *Theriaca* contains more opium by one third than the *Mithridatium*; the *Philonium* is much more soporiferous than the *Theri-*
aca

ata itself, and besides has in it a considerable quantity of pepper, a very hot aromatic. Now as nothing is required upon these occasions but the efficacy of poppy-juice, it is better to administer it by itself, than mixed with other useless or even noxious ingredients.

But as women in labour sometimes languish and are faint, being quite exhausted by the pains of delivery, aromatics of an agreeable flavour are sometimes administered at the same time; but those of the mildest sort are chosen, or else they are administered in very inconsiderable doses, that with their delightful fragrance they may cheer and strengthen, not hurt by too strongly stimulating. For this reason, fragrant distilled waters may be given, or a mild decoction of oats and barley, with a fourth part of fragrant Rhenish wine (a prescription of the same kind is likewise to be met with in the *Materia Medica*); or a drop or two of oil of cinnamon, with sugar pounded a long time in a glass mortar, is added to the powders which are taken in reiterated doses.

To these are added such ingredients as absorb acids; because pregnant women are often troubled with an acid heart-burning; and after delivery, acids are sometimes administered, such as the decoction already praised, or at least things that have a tendency to turn acid, as barley-gruel, oaten-gruel, pap, emulsions, and things of that kind; for which reason these things shall be again recommended at §. 1331.

When any of these are administered, the constitution of the lying-in woman is to be taken into consideration. If this should happen to be hot and sanguine, the mildest sort of cordials should be prescribed; on the other hand, more active remedies may be allowed to those of a cold phlegmatic constitution. But care should always be taken not to give remedies of too hot and stimulating a nature. A very pernicious custom has obtained in some places, especially in the country, to give women just brought to bed warm wine, with a large quantity of mace and cinnamon in it; and this aromatic wine they blend with yolks of eggs; and the women brought to bed drink so plentifully

tully of it, that I have often seen them drunk a few hours after delivery. It is obvious, that there cannot be a more dangerous practice. The more prudent give them broths, at different times, and in small quantities; this has an excellent effect. They then give them a spoonful or two of fresh oil of almonds, either unmix'd or with broth, which is of the highest service: at least if the stomach can bear it, for it makes some qualmish; and then it is better to abstain from oil, and to substitute gentle emulsions from oily seeds in its place, which are of service by diluting, whilst they also contain a quantity of oil, are easily borne by the stomach, and impart to it kindly nutrition.

As soft repose is so beneficial to women who have been just brought to bed, it is easy to judge what opinion we should have of the custom of preventing lying-in women from sleeping the first three hours after delivery, which has obtained in so many places. Thus rattling women, and sometimes too when they have drank too freely, make a noise about the lying-in woman's bed if she should but wink, and the neighbours justify their joy with instruments of music in order to keep her awake. This custom seems to be derived from hence: It has been already observed, that sometimes after delivery, whilst the womb remains flaccid, and does not contract itself, lying-in women have suddenly died of a violent hæmorrhage; and the bystanders, who thought them asleep, have, contrary to all expectation, found them dead. But if the abdomen be bound with a broad swathe, and the womb shews signs of contraction, there is no reason for any such fear. Besides, if a physician, or a skilful midwife, should sit by the lying-in woman's bed during those hours, it will quickly appear whether any dangerous accident is to be apprehended; and in case there should, it will be easy to assist the patient, as hath been already said. Prudence directs that the lying-in woman should not be deserted in the hours which immediately succeed delivery; but there is no manner of reason why she should be kept awake with continual noise. Much light is hurtful to lying-in

women: it should therefore be diminished, to prevent its striking their eyes; in such a manner however, that the physician sitting next the bed may be able to distinguish whether the patient's face turns pale or falls suddenly; whether she begins to feel anguish; but from the pulse and respiration a skilful physician may easily form a judgment whether the vital force begins to fail. A fainting fit, when coming on, may be prevented by a gentle cordial of an agreeable flavour, and by drawing the broad swathe which binds the abdomen tighter, as I have frequently experienced.

But as the lips of the pudenda suffer much by delivery, especially in women that are brought to bed for the first time; and if the head of the fetus should happen to be of a considerable size, or to stick a long time in the passage; in that case, a lenient fomentation is required. Mauriceau^b prepared, upon warm cinders, a soft cataplasm made of oil of almonds and the yolks and whites of eggs mixed together; which having spread upon a linen cloth, he applied it to the privy parts; and renewed it every three or four hours, if there was occasion: he then fomented them during the first five or six days after delivery, twice or thrice every day, with a decoction of linseed, barley, or soft and emollient herbs; he at the same time cleansed it from clotted blood and other filth: others foment with warm milk; with others, warm buttered ale is in use. If the lips of the privy parts should swell with a dropsy, as sometimes happens, discutient remedies may be added to these, as elder-flowers, camomile, sage, &c.

§. 1325. **W**OMEN in childbed are liable to an immoderate flux of the lochia, either from a too great thinness or commotion of the blood, but more frequently from things retained in the uterus, which prevent its contraction, such as those enumerated at §. 1322.

The lochia are said to be excessive when they exceed

^b Malad. des femm. accouch. Tom. I. liv. 3 chap. 2. p. 374.

ceed the usual quantity: therefore to determine any thing with certainty upon this subject, we should know the quantity which comes from the womb in a natural way; which is no very easy matter, as the physician only knows that this discharge is received in linen cloths, or that the bed is defiled by it, and thence forms a conjecture. Wherefore all the authors who have wrote upon the subject of midwifery, are silent with regard to the proper quantity of the lochia; they speak only of what exceeds the proper quantity, or such as are suppressed. Hippocrates indeed, (as I observed upon another occasion at §. 1284, where the quantity of the courses was spoken of) has said, "The evacuations made by a woman in health after delivery, first come out in a quantity capable of filling an Attic hemina (three quarters of a pint) or something more; then less, in the same proportion, till they cease^a." We meet with something to the same purpose in another place^b, where the same measure is assigned: but he adds, that sometimes there comes out a little more, sometimes a little less. The Attic hemina and a half, seems only to be the measure assigned to that quantity of blood which comes out at the first burst after the placenta has been loosened, and is sprinkled on every side *like water poured out upon a table*^c. It is a more difficult matter to determine the quantity of blood that afterwards runs out, as the Comentations, the cataplasms, &c. which are usually applied to the parts, are dirtied by this.

Besides, a great diversity is observed, not only in different women in labour, but in the same woman at different times of lying-in. It has been already observed, that strong women, and such as are hardened by daily labour, have but scanty courses; and that the lochia in like manner come from them in smaller quantities; whilst the contrary holds with others who pass their lives in luxurious indolence. But as the womb, whilst it is widened in pregnancy, insensibly acquires more dilated vessels, as was said before, the

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greater

^a De Mulier. Morb. lib. i. cap. 71. Charter. Tom. VII. p. 77.

^b De Natur. Puer. cap. 5. Charter. Tom. V. p. 314, 115. ^c Ibid.

greater evacuations are to be expected after delivery, the more the womb is widened ; and this is the reason why the quantity of the lochia evacuated, may in the same woman be different at different deliveries. Mauriceau^d has remarked in his aphorisms, which follow like corollaries from his own writings, that lying-in women who have been delivered of bulky children, generally suffer a violent hæmorrhage immediately after delivery ; because the placenta in such a case is generally larger, and has larger vessels ; to which the vessels of the womb, being likewise increased in bulk, correspond.

It was the opinion of Galen*, That “ the fetus
“ draws to itself the best part of the blood for its own
“ nourishment, and leaves the rest ; which is the rea-
“ son why pregnant women are troubled with bad
“ humours, which are evacuated by nature after de-
“ livery.” And a little after he adds, That there-
fore, “ what is thus thrown off is called Lochia, a
“ childbed evacuation, and not simply an evacuati-
“ on.” But though the womb is cleansed by the suc-
ceeding evacuations, as will be taken notice of here-
after, yet that blood which flows copiously from the
womb, immediately after the separation of the pla-
centa, is pure ; but not that blood which has been left
behind after the best part has been applied to the
nourishment of the fetus. Hippocrates^e has made
this excellent observation in treating of the subject now
under consideration : *The things evacuated after deli-
very come out like blood from a victim, if the woman be
in health, as we observed, and is likely to be in health ;
and they soon grow together, and are purged off.* He
makes the same observation in another place^f : *But if
the woman is neither in health nor likely to be so, there
comes a more scanty evacuation from her, and of a worse
sort, nor does it so soon come to a consistence.* This is an
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^d Aphor. 58. Tom. I. p. 536.
poc. Epid. Tom. IX. p. 141.

* Comm. in Textu xx. Hip-

^e Prodeunt autem, velut sanguis e víctima, si sana sit mulier (ut diximus),
et sana futura sit, citoque concresecunt, et expurgantur. *De Mulier.*
Morb. lib. i. cap. 71. Charter. Tom. VII. p. 771.

^f Si vero sana non sit mulier, neque sana futura, purgatio tum parci-
tum

indication of vicious humours: for the blood on this occasion runs out with all the qualities which it had whilst it flowed through the vessels of the pregnant woman, so that it will be well-conditioned if she be in health. This should be particularly attended to, that it may be thoroughly understood in what state the lochia are in the womb, and what changes they undergo afterwards, though they continue to be called by the same name.

The too great quantity of the lochia is chiefly considered at the time that immediately follows delivery; for then the greatest danger is apprehended from them: for in the natural order these lochia are less red a few hours after delivery; and this redness is insensibly diminished; so that the red colour on the third, the fourth, or the fifth day, goes off entirely. For the womb being insensibly more and more contracted, diminishes the capacity of its vessels. So that the too great flux of the lochia is known by the blood's bursting out with over great violence, immediately after delivery, insomuch that the face suddenly grows pale, the eyes are darkened, the ears tingle, a fainting fit comes on: it is likewise known if the blood flows out at first in a moderate quantity, but continues to flow longer than usual, and does not change its colour for some hours.

The too great agitation of the blood occasioned by fatigue undergone, fear, or other passions of the mind, may contribute hereto; this shews the utility of opiates, by which such an agitation is happily allayed. To these causes is likewise added the too great fluidity of the blood; which, even when the vessels are contracted, causes the blood to flow on. But it is generally known, that, in healthy and robust persons, the blood is dense and solid, and that it quickly coagulates when it runs out of the vessels.

But such a state of the blood supposes the vessels to be firm and robust; whereas, on the contrary, the

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blood

in specie deterior, prodit, ne cito concrefcit. *De Natur. Puer. cap. 5. parter. Tom. V. p. 315.*

Levret, l'art des accouch. p. 134. Brudenell Exton, p. 409.

blood is thin and more fluid than ordinary, when the weak vessels act less powerfully upon the blood contained in them. Wherefore, if the blood, which runs out, quickly coagulates, it is a sign both of present and future health in the lying-in woman.

But in flaccid and soft bodies, the empty womb contracts itself more weakly and more slowly; whence there follows a too great flux of the lochial discharge. Hippocrates seems to have hinted at this in the following passage: *But if a woman after delivery should be purged rather more than enough (for that sometimes happens when the uteri are broad-mouthed), so that some of the veins which go to the womb are broke by the fetus's coming out with violence,*^h &c.) But if the orifice of the womb should continue wide, it is a sign that it does not sufficiently contract itself, and that therefore the vessels continue a long time open. It is moreover evident, that the vessels of the womb may be injured by the violent and sudden coming out of the fetus; as also by violently pulling out the placenta, or when, sticking fast to the womb, it is separated by a rough hand, and so the substance of the womb itself is torn, as has been said before. But a too great evacuation of the womb after the birth of the fetus, is most commonly caused by the things retained in the womb: for then the contraction of the womb is impeded, and yet it is constantly irritated and excited to contraction; especially if the things retained are partly pushed into the orifice of the womb, yet without being forced through it. It is sometimes observed, after the first effusion of blood which follows delivery, that the mouth of the womb is contracted; and that the blood which runs in the womb, gathers into a clotted lump, which soon fills the whole cavity of the womb, and then little or no blood runs out. But when this clotted lump is forced out, there then again flows out a considerable quantity of blood, because the vessels have not yet been sufficiently contracted. This sometimes happens again

^h Quod si mulier a partu paulo amplius quam par sit purgata fuerit (id enim etiam contingit si uteri lato ore fuerint, ut ex venis ad uterum tendentibus quædam ex violento fœtus egressu perruptæ fuerint,) &c. *De Mulier. Morb. lib. 1. cap. 43. Charter. Tom. VII. p. 754.*

again and again; but the more the womb contracts itself, the less the lumps are that come out, and at last these evacuations become moderate.

Such a great loss of blood is followed by many ill consequences; especially if the lying-in women are by constitution weak and delicate. We have already shewn, that an ill habit of body, a redundancy of bad humours, a pituitous dropfy, and stagnations of watery humours in the habit of the body, are the consequences of a copious hæmorrhage. Hippocrates has remarked the same thing with regard to the too great evacuations of the womb after delivery: *A slight fever and a cold fit seizes her, and then a heat all over the body; sometimes likewise horror, and a loathing of food, which she will detest; she will be thin and weak, and pale and swelled; she will nauseate victuals; but if she should eat or drink, she will not digest*ⁱ. It has already been frequently remarked, that a certain quantity of good blood is required, that from the crude food taken in benign humours may be formed, by which nature's losses may be repaired; from whence it is evident, that there is a universal degeneracy in the body after a sudden and considerable loss of good blood.

But as so great danger is to be apprehended at the beginning of delivery from a copious discharge of blood, and so many ill consequences sometimes attend it, it may perhaps be thought that the same danger is to be apprehended from continued evacuations of the womb after delivery, though those evacuations should not be so considerable. But it should be taken into consideration that that danger is doubtful, because by a sudden flowing of the blood, the vessels collapse, and scarce any arterial blood comes to the brain or the cerebellum, nor have the vessels time to contract themselves, and they remain full, though the quantity of humours be but small, and thus the circulation of the blood continues undisturbed. Even a robust man will faint upon losing two pounds of blood at once; but
this

ⁱ Eam levis febris et rigor apprehendit, calorque toto corpore; nonnunquam etiam horror, et cibi fastidium, et omnino execrabitur, et tenuis erit, et debilis, et pallida, et tumida, et cibos averfatur: si quid vero edat aut bibat, non coquitur. *Ibid.*

this will not be the case if he loses three ounces a-day for eight days together. Add to this, that so long a delay affords time for cure, whereas sudden death is sometimes the consequence of a profuse hæmorrhage after delivery.

Authors are not however agreed with regard to the time that the evacuations which follow delivery, should last. The duration of these evacuations has been determined according to the different sex of the child brought forth, by Hippocrates, in this manner; *Evacuation after delivery lasts generally in women who have born a girl two and forty days; and this being the longest purgation, is complete: But there is no danger if it should not last twenty-five days. When a male child is brought forth, the evacuation lasts thirty days; this is its longest duration, and thus it is complete: There is no danger, however, if the purgation should be over in twenty days* ^k. If the rest of the passage be read, it will appear evidently that Hippocrates has not determined the time of these evacuations from his own observations, but from an hypothesis that as many days should be allowed to this evacuation as pass between the first conception of the child and its perfect formation, that is, till the different limbs are to be distinguished. But Hippocrates has thought proper to allot the space of two and forty days for a female child, and thirty for a male, that this formation may be completed. What induced him to this, it is not easy to discover. Duretus was of opinion, that as many days should be allotted to the evacuations after delivery as would have been required by the menses if the woman had not been with child. “ For those
“ whose monthly flowings last two days, as for ex-
“ ample, women who are somewhat masculine, are
“ eighteen days in childbed; those whose monthly
“ flow-

^k Nam et purgatio a partu fit mulieribus ut plurimum, in puella quidam concepta, duobus et quadraginta diebus, eaque, ut maxime diuturna, ita perfecta est: Extra tamen periculum fuerit si etiam quinque et viginti diebus purgetur. In masculo vero purgatio diebus triginta contingit, sicque hæc longissima et perfecta est: Extra tamen periculum fuerit, si diebus viginti purgetur. *De Natur. Puer. cap. 5. Charter. Tom. V. p. 314.*

flowings last three days, are twenty-seven days in childbed; those in whom they last four days, are thirty-six days in childbed; but those whose monthly flowings last five days, are seldom entirely evacuated till the forty fifth day after delivery¹." It is his opinion, that the evacuations after delivery should be looked upon "as dead leavings of the menses remaining in the larger veins and about the womb, which have been preserved uncorrupt during the time of pregnancy by the increase of native heat, occasioned by the conception of the fetus;" and for that reason they should be purged.

But it is sufficiently evident, that all these inferences are drawn from a preconceived opinion, and not from accurate observations. The womb at the time of pregnancy is stretched, and its vessels are dilated: after delivery, all its parts should return to their first size and magnitude; and so the vessels should be contracted in such a manner as to admit and to let out less blood. The evacuations of the womb after delivery answer this end, that the vessels of the womb being thus emptied, may be contracted. The stronger therefore the vessels are, the less force the vessels of the womb are impelled with, the shorter time will the evacuations after delivery last. For this reason such women as have suck to their own children, make less considerable and less lasting evacuations after delivery than others: for the same reason, these evacuations are diminished in such women as are of robust constitutions, hardened by labour and violent exercise; but in those who are weak and lax, they are copious and lasting. Wherefore Mauriceau^m has determined, that no constant rule is observed in this case; and that no diversity is occasioned by the varying sex of the child, but that the evacuations after delivery are generally at an end in fifteen or twenty days. Levretⁿ confirms the same by his observations; and at the same time with great good

¹ In Coac. Hippoc. Tractat. 3. n^o 4. p. 444, 445.
 s. malad. de femm. gross. liv. 3. chap. 9. p. 414.
 s. accouch. p. 135.

^m Traite
ⁿ L'Art

good sense informs us, that after the milk-fever, and before the customary monthly evacuations return, it often happens that blood flows again from the womb, but without doing any hurt. He however thought, that this generally happened in such women as were of a bad constitution, or when their monthly evacuations return in an irregular manner. Yet I have observed the same thing in women of the best constitutions, and in those whose monthly evacuations were entirely regular. Nor will this appear surprising, if it be taken into consideration, that the vessels of the womb had been greatly distended towards the latter end of the time of pregnancy, and, though they were afterwards contracted, did not immediately recover their first firmness, but still for a time easily give way to the impelled humours; hence the extremities of the vessels of the womb being dilated by a slight cause, pour out blood. Thus, when a woman does not give suck to her own child, the swelling of the breasts beginning to subside, a bloody evacuation of the womb returns, and often continues for several days. For the same reason, the monthly evacuations, after delivery is over, are generally more copious than they were before.

§. 1326. **I**F from things retained in the uterus, these are to be brought away.

This subject has been already treated of, as far as an immoderate evacuation of the womb after delivery is occasioned by clotted blood, another fetus, or the secundines, remaining in the womb.

It does not seem improper in this place to say something of that fleshy substance called the *mola*; because this too is generally reckoned amongst those things, which, being retained in the womb, may prove hurtful. It is well known, that strange stories are told by women concerning the mola; as that these molæ not only have the figures of various animals, but likewise are capable of animal motion, such as flying, running, seeking places of retreat, &c.; that such molæ have attempted to return quickly into the womb, from whence

nence they had been driven just before; and that, if this was not prevented, the wretched woman in labour would be threatened with certain destruction by this monster: nay more, when a talkative and unskilful midwife has been talking about the mola, I have known the women who were to have assisted the person lying-in, run away in a fright, being seized with fear lest that monster should seek a lurking hole about them. Many such stories are told, which I should be ashamed to relate.

If the womb should swell, as happens frequently in women with child, and yet no human fetus be confined in the womb, this, such authors as have wrote upon the art of midwifery, call a *false conception* and *spurious pregnancy*. For this reason, a dropsy of the womb and a tympany, whilst the womb is distended by the elastic air shut up in it, are reckoned amongst false conceptions^a. But this name has been chiefly given to the solid, and, as it were, fleshy masses which issued from the womb after the symptoms of pregnancy; these were generally of an irregular form: such were properly called *Molæ*.

It was a very general opinion, and approved of by authors worthy of the highest regard, that, by the commerce of the two sexes, there was sometimes produced, instead of a human fetus, such a deformed mass, which totally degenerates from a natural conception. Hippocrates^b has described it in this manner: "But this is the cause of the conception of the mola. When the menses are very copious, and the seed they have received is scanty and vitiated, then a conception by no means genuine is formed: then the belly is as it were filled with the uterus, but nothing moves in the belly, nor is milk generated in the breasts; but the chest swells. The woman therefore continues in this state for two, often for three years. And if a single fleshy lump is generated, she perishes (for it is impossible she should recover); but if many such substances are generated

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^a Levret. Ibid. p. 184.
Charter. Tom. VII. p. 770.

^b De Mulier. Morb. lib. i. cap. 70.

" ted, a thick blood; bursts out copiously at her pu-
 " dendum. If this emission be moderate, she escapes
 " otherwise, she dies of the excessive loss of blood.
 " This alternative always attends this disease. But
 " it may be discerned by the plenitude, and by there
 " being no motion in the belly." He speaks to the
 same purpose in another place, excepting that there
 we read, *Neque lac in mammis generatur, ipsi tamen*
mammæ turgent; " Nor is milk generated in her
 " breasts, but her breasts swell:" whereas the words
 in the former text are, *Pectus turget*, " the chest
 " swells." These were then the symptoms from
 which Hippocrates conjectured the formation of a
 mola: If the abdomen swelled, and yet the motion
 of the fetus was not perceived at its proper time; and
 if at the same time the breasts swelled, and no milk
 was generated in them notwithstanding. For provi-
 dent nature, at the very time of pregnancy, prepares
 food for the new-born creature. But when a mola is
 generated, that would be unnecessary, as there would
 then be in the womb an unformed mass, and not a
 human fetus.

But it likewise appears, that various tumours gene-
 rated in the substance of the womb itself, have been
 called *Molæ*. For Aëtius has thus described them:
 " What is called the *mola*, is a disposition of the womb
 " tending to a schirrhous tumour; it sometimes has
 " its rise after a preceding inflammation, sometimes
 " after a local ulcer over which flesh has grown; it
 " took its name of *mola* from the slowness and dissi-
 " culty of its motions; an obstinate tumour follows
 " this disposition, together with a drawing back of
 " the hypochondria, leanness, a faded complexion,
 " loss of appetite, and at first there arises an opinion
 " of conception, &c. It is manifest that he in this
 place, calls the lumps of corrupt flesh which grow in
 the substance of the womb, *molæ*. He soon after adds
 what follows: " Some authors tells us, that, in certain
 " women, lumps of flesh, of the size of a walnut, are
 " voided

c De Infœcundis. cap. 16. ibid. p. 855.
 p. 161.

d Lib. xvi. cap. 82.

voided by the pudendum, sometimes every month, sometimes every two months, sometimes every three months. Some have given up this disorder as utterly incurable, others think it can be cured only in its beginnings." It seems probable, that abortion is here hinted at; but after he has described various fomentations, baths, suppositories, &c. partly of an emollient, partly of a stimulating nature, he adds: "This being over, there often flows out a quantity of black and clotted blood, and the disorder is dissipated. But a philosopher says, the monthly flowings of my friend's wife being retained, I at first thought she had conceived; afterwards, the tumour being increased in bulk, I apprehended there was a dropsy in the case, when I perceived that the whole body was swelled: but when I at last found that it was a species of disease which some call *plinta*, and others *mola*, I made a decoction of rue and anniseed in old fragrant wine; and then having thrown out the herbs, I offered her the warm wine, as if it had been so much water; and the woman immediately recovered, after having voided a great quantity of blood." Certain it is, that neither a schirrhous tumour in the womb, nor an ulcer, are to be cured by a copious hæmorrhage, which is rather a bad symptom, as it shews that the vessels are cut away by a sulphureous watery humour, and that therefore all sorts of ill consequences should rather be feared than recovery hoped for.

Many observations evince, that miscarriages have often been mistaken for *mola*. Mauriceau himself, though he ascribes the origin of *mola* to the corrupt seed of both sexes, and makes a distinction between them and false conceptions, acknowledges, notwithstanding, that he has found, by reiterated experiments, that those conceptions which were called false, were true conceptions on the first days after the woman was impregnated; and that therefore they were only little *placentæ*, whose membranes were stuffed with coagulated blood; which being drained of the hu-

humours contained in them; and compressed by the contraction of the uterus, acquire the figure of the hollow uterus itself. But the fetus is not found, because, being void of life, it dissolved through its thinness; or, the humours having burst out, slipped away in the shape of filthy corruption. It is well known, that the smallest embryos, except they are suspended in some fluid, entirely lose their form.

From what has been said, it is evident, that the mola do not spring from corrupt seed, as it is acknowledged^f that both they and false conceptions differ from each other only by their longer delay in the womb. For if these little placenta should come out in the second or third month, then Mauriceau calls them *false conceptions*; but if they should remain longer in the womb, and be increased in bulk, then he would have them called *mola*. We are told in a more accurate manner^g, that a miscarriage is thrown out two different ways; either in the shape of an egg, or in the form of a mola: “ Sometimes it appears like
“ a membranous bladder, greater or less, according
“ as the interval after impregnating is longer or shorter; and not unlike an addled egg, excepting that
“ on the outside it is surrounded with the first coat
“ of the little placenta. This coat appears to be slightly suffused with blood, which is easily washed from
“ it if it be gently shook in cold water; and if a lump
“ of coagulated blood should stick any where too tenaciously, that is, generally speaking, easily taken
“ off by a pair of tongs.” This is exactly what Mauriceau called a false conception.

But when the miscarriage comes out in the form of a mola^h, in that case, “ it represents a mass of red
“ blood very compact, which cannot be dissolved by
“ any artifice I have yet discovered.” But this mass consists of irregular segments pressed hard together. The little stems of the diminutive placenta of the egg it keeps within its substance in such a manner, that but one can be got out from thence, and that always more

OF

^f Ibid. p. 111.
p. 120.

^g Noortwyk de utero gravido, p. 112.

^h Ibid.

or less torn; but the placenta never can be got out entirely: Such a mola is therefore a natural conception; but the human egg is so bound by blood poured out and coagulated, and so compressed by the contraction of the womb, that the roots of the little placenta are altogether entangled, and the membranes may be easily broken, that the humours may be poured out together with the little embryo; or, if it be left in, it may be so compressed as no longer to be distinguishable. For the mass which surrounds the eggs is not every where of the same thickness, but it is much thinner near the border of the placentula; so that the membranes may be easily broke in that part, as it resists less. But when such a mola is properly dissected, the fetus is found in the amnium, far pressed in: "I have such a mola, in which, at first view, I could not discover an embryo; at last it appeared, though it was but small, scarcely bigger than a grain of barley; it was hid amongst the inequalities of the amnium irregularly pressed in: but I have another likewise, which, though in its egg it is proportioned to the mola, is so fleshy that it equals the first joint of the thumb in thickness."

It sometimes happens, that coagulated blood, sticking to the egg, does not go round its whole surface; whence, in some part of such a mola, there generally appears a thin pellucid membrane, through which the contained embryo, swimming in the liquor of the amnium, is plainly perceived. Such a mola is described by Denys^k: This little membrane contained about two spoonfuls of fluid; this he compares to the liquor of the pericardium: the white embryo equalled two fingers breadth in its length. I have seen many embryos contained in their proper membranes. Some I have kept; and I have carefully observed whether they were very little, because then the whole external surface of the egg appears rough, and sends from it little branching fibres: in those of a larger size, some part of the surrounding membrane is without these little fibres,

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ⁱ Ibid. p. 121.

^k Over het ampt der Vroedmeesters en Vroedvrouwen. 8^o. hoofdstuck. p. 170, 171.

and is pellucid. When that embryo equalled two joints of the little finger, some part of the egg was without these little fibres; therefore the clotted blood should the less stick to it: and in the remaining parts of the egg it stuck fast to the little fibres. Hence, though the whole mola had the appearance of a fleshy, solid mass, in the lower part there appeared a pellucid membrane of half the size of a shilling. But this membranous part appears to have been a lower part of the egg, next to the orifice of the womb, as appears from the description.

This woman had suffered a considerable hæmorrhage, and violent pangs of delivery; wherefore it is not to be wondered at, that the blood having got among the little fibres, which bind the external membrane of the egg, should be, by the powerful contraction of the womb during the pangs of delivery, changed into such a mass, as it were fleshy, dense, thick, and broad, in the upper part, thinner and narrower in the lower part, so as in figure to resemble the human heart pretty nearly, with a thin membranous and pellucid top.

But Denys¹ was of opinion, that from the former delivery, part of the placenta remained fixed to the womb, which grew into a bulk, to which afterwards, the woman being impregnated, the egg stuck together with the embryo contained in it. But it is sufficiently evident from what has been just said, in what manner such a mola may be generated, without supposing part of the placenta to remain after the former delivery.

At the same time, the reason is known why there is frequently no embryo found in such a mola. For that thin membranous part, either covered with no blood, or with but little, the womb being contracted at the time of the pains, is easily broken, and the tender embryo rolls out with a considerable quantity of blood; or if it remains, being fixed to the egg by the navel-string, the humours by which it was preserved from pressure being run out, it is in such a manner compressed by the contracted womb, that it disappears

as it were; especially if blood should enter the egg evacuated of the humours: for it is well known, that a hæmorrhage of the womb accompanies the exclusion of the fetus. No one, who has not attempted it, can know how difficult a matter it is to disengage the little embryo from such a mass of thickened blood: it moreover often happens, that it is sought for in vain, having already slipped through the broken membranes. Not long since, it took me up three hours to discover an embryo in such a mola, which had been driven out on the eighth week after conception. Midwives want address; and physicians are so much taken up with their practice, that they want time, and perhaps patience, to investigate these things. Wherefore it is not to be wondered at, that the mola has been considered as an unformed mass, and a false conception, as nothing organical was discovered in it. But it is evident from what has been said, that they had been true and natural conceptions; but that they had, by the circumambient blood and the contraction of the womb, been changed in an extraordinary manner, and driven out by abortion.

It appears from hence what we should think of the symptoms of the mola, or of false conception, whereby it may be distinguished from the true. Many authors who have written upon midwifery have enumerated these; as also Lamzeerde^m, who has written a particular treatise upon the molæ. Almost all these acknowledge, "That the diagnostic symptoms of the mola generally coincide with the symptoms of true impregnation." But the other symptoms enumerated are of such a nature, "that they are at least equivocal." The same excellent author admirably explains the manner in which a miscarriage or its remains are changed into a mola; and hence some conclude, but not very wisely, that it was a false conception, and not a true impregnationⁿ. Certain it is, that Ruysch, a person of so much discernment in these matters, whilst he, by order of the magistrates, examined

O 3 mined!

^m Hist. natur. Molar. uteri, cap. 16. p. 148.
ⁿ Art. des accouch. p. 180. ^o Ibid. p. 62, 63.

ⁿ Levret;

mined all the midwives of the populous city Amsterdam, that he might prevent the ill effects of their ignorance, made an accurate research into the history of the molæ, carefully examined many that were brought to him, and at last concluded, " That it is very probable, that the molæ so much talked of are nothing else but the fleshy excrescences of the womb or little placenta's retained, and, as I hinted above, compressed by the womb; but never occasioned by bad conception ^p." Such fleshy excrescences, sprung from the very substance of the womb, being in reality sarcomas, have often been looked upon as molæ: " Sarcomas, I say, because I have found in them nothing but flesh: I have observed such excrescences of the womb sticking by a stem to it, whilst the women were in the pangs of delivery, and I exhibit the figure of them when out: but this is by no means to be wondered at, since I have observed such lumps growing even in the stomach and the urinary bladder." If what the celebrated Levret ^q has said upon these subjects be compared with this, I mean those passages in which he points out an admirable method for the cure of these disorders by ligature; as likewise what the same author has elsewhere written upon this subject ^r; it will appear evidently, that these sarcomas of the womb occur more frequently than was formerly thought, and at the same time that they were often described as molæ even by men of skill. For though such tumours generally require a skilful hand to remove them, it however sometimes happens that they are separated of their own accord and fall off: of this many examples are to be met with in the same place. It seems highly probable, that that mola, of which a description and figure is given in the *Acta Parisiana* ^s was of the species of sarcomas or polypuses of the womb. The history of this mola was sent by the academy of Montpellier. The stem from which the whole mass

of

^p Observat. anatom. chirurg. obs. 28, 29. p. 25, et seq. et obs. 58. p. 54.

^q Observat. sur la cure radic. de plusieurs polypes de la matrice, &c.

^r Mem. de l'acad. de chirurg. Tom. III. p. 518.

^s Acad. Royal des Sciences, l'an 1735. Mem. 770, 778.

of the tumour hung, appears plainly in the figures of this mola; and if the history be compared with those accounts we meet in the Memoirs of the Royal Academy of Chirurgery^t, scarce any doubt will remain.

It is moreover to be observed, that if an embryo of two or three months should slip out, the membranes being broken, and the secundines should remain, as often happens, as the aperture of the womb is sometimes so small, that these cannot be taken out without a violent dilatation of it, the secundines then sometimes degenerate in an extraordinary manner. The celebrated de Gorter^u has admirably observed, that if a little embryo should die, the whole vital flow of humours does not cease in the placenta, which receives blood from the womb: so that if it should continue to grow, and should after a certain time be separated from the womb and forced out, there comes out an unformed mass, which is called the mola; but as in little embryos the bulk of the placenta is, in proportion, bigger than in a mature fetus, he for that reason compared it to the seminal leaves of plants, which are of more considerable size, and prepare nourishment for the tender plant, till it is able to subsist itself; for then these, being become useless and dried, fall off: but as these seminal leaves can subsist without the assistance of the rising plant, he imagines that the placenta can subsist in the same manner, the embryo being destroyed. It is confirmed by the observations of Ruysch, that the placenta may continue a long time in the womb, and degenerate into little watery bladders^v. He moreover observes, that, "The little placentæ of a miscarriage of two, three or four months, are so hardened, and take such a form, that they may be looked upon as moles by the unskilful, should they stay in the womb a little longer than proper, or for some days." He has given figures of these lumps called *Mola*; and at the same time he remarks, that by the compression of the womb,

^t Loco modo citato.

^u Van de Sluythband der kraemvrouwen.

^v Observat. anatom. Chirurg. n^o 128. p. 261.

womb, “ they become more solid than musculous
“ flesh.”

But Ruysch farther observes ^w, that the coagulated blood retained in the womb is made very hard by the womb’s compression; “ hung to which is often found
“ something resembling a membrane, like what we
“ see swimming upon the water, after a person has
“ been bled in the foot.” He has also given us figures of the masses of coagulated blood degenerating. I have often seen such masses thrown out in the first days of lying-in; these resemble a pellucid, glutinous juice, of the thickest sort, but which is easily agitated by the slightest motion; this terrified the women standing by, and made them swear that the mola had been alive, and that they were eye-witnesses of this. But if coagulated blood should remain a long time in the womb, it becomes more dense; the subtle parts are forced out; and a sulphureous, watery humour, resembling what is washed off of flesh, comes from the vagina: then a tenesmus follows, and a mass is forced out, whose lower part has stuck in the neck of the womb often for some hours; it is formed into a top which had there been less pressed, whence it the more resembles blood of a dark hue which is still tremulous, whilst the remainder of the mass is rendered more solid by the compression of the womb, and its redness becomes less deep. Whilst such a mass comes out, it is a difficult matter to persuade those present, as well as the lying-in woman, that it is not a mola, nay, even a living animal. They are confirmed in this opinion by the lying-in woman’s finding great relief, whilst the womb is freed from the bulk by which it was loaded. It is easy to judge from hence, what we should think of all the stories which are told of women in labour, who have been delivered of a mature fetus, and afterwards of a mole.

It being therefore evident, from what has been said, that a miscarriage, and the corrupted leavings of the secundines, the coagulated blood, and the sarcomas of the womb, have often been taken for molæ; is there
any

any occasion for having recourse to the invention of a monster formed by the corruption of the seed and the monthly evacuations? I indeed know no history of the mola, though I have read several, which may not be satisfactorily explained by the causes enumerated above. Is the distinction made by Lamzweerde a good one? "The mole is twofold; there is one of generation which is treated of here, and another of nutrition¹." He acknowledges, that in the wombs of virgins, fleshy tumours may spring from the matter of nutrition: and these he would have us call *monstrum nutritionis*, "moles of nutrition." But we meet with the following conclusion in that author, concerning the mola of generation: "The matter of the mole is a diseased production, both in conception and formation, or the seed of both sexes, destitute of certain particles, poured out into the area of the womb: the matter of nutrition is the blood of the menses flowing in."² He therefore lays it down as a rule, that coition is absolutely necessary to the production of the mole of generation. Fernelius is of the same opinion; this is his definition: "The mole is a fleshy tumour, generated not in the substance, but in the capacity of the womb."³ Thus he excludes those mola which Lamzweerde calls *mola of nutrition*. But he also lays it down as a rule, that coition is necessary to the production of a mola; these are his words: "The cause of the mole is the diseased seed of the man, and that either corrupted or some way defective; which may draw nourishment, but cannot form nothing⁴."

It is certain, that all those masses called *mola*, which contain a human embryo, and those which are formed by the corruption of the little placenta left in the womb, cannot be produced without coition. But it is equally certain, that the sarcomas of the womb, and the masses that spring from clotted blood, may be generated without any coition. But as these are comprehended under the general name of *mola*, it is evident that

¹ Histor. molar. uteri, cap. 1. p. 13.
² Patholog. lib. vi. cap. 15. p. 194.

³ In sine capitis 10. p. 104.

⁴ Ibid. p. 195.

that the name of *molæ* should be used with great caution, lest untainted virgins and chaste widows should be branded with the infamy of incontinence. Ruyfch^b bears witness, "That such moles have been forced out by virgins, or at least by such as were not suspected of being otherwise." He gives us the figure of such a mole, which in its narrow neck resembles a sarcoma or polypus of the womb. He likewise observed, that, "Old women who have no commerce with men, sometimes bring forth such moles." Levret^c testifies from his own observations, that such moles are generated about that period of life when the monthly evacuations cease; in the young, very rarely. Others testify the same thing^d.

When some strange degeneration of the womb or the adjacent parts has produced large tumours, these are improperly called *moles*. Thus Lamzweerde^e found in the body of an old maid, whose abdomen had been swelled upwards of twenty years, the whole womb become schirrhous and cartilaginous, scarcely yielding to the knife, and weighing eighteen pounds: in the corpse of a girl of eleven years of age, he found a tumour of fifteen pound weight, which hung by a small stem from the testicle. Both these tumours he considered as moles. In the same manner, Paræus^f determined, that a schirrhous and hard womb, which, being taken out of the body, weighed upwards of nine pound, "had been at first a mole, which, with the substance of the womb, had, in process of time, degenerated into a schirrhous body^f." Nay, in Moschion, where he treats of the mole, we read as follows: "It is the hardness of the matrix, occasioned by the preceding heat, by which the whole body is so extended, as to give room to an opinion of pregnancy. And when any thing is generated in the matrix, the flesh is increased in bulk; and the midwife having put her finger in the orifice or the neck of the womb, finds the excrescence. And some-

^b Observat. anatom. chirurg. n^o 58. p. 54. ^c L'art des accouch. p. 187. ^d Brudenell Exton, sect. 8. p. 127. ^e Hist. viii. natur. molar. uteri, cap. 2. p. 14, 15. ^f Spach. Gynæc. p. 424.

sometimes the whole womb is affected with this disorder to such a degree, that the belly becomes hard all over like a stone, and the rest of the body is of a bad colour, and a general nauseating is felt &c." It is evident from these observations, that several different disorders of the body have been described by authors under the name of the *mola*. It at the same time appears from what has been just said, what we should think of the *mola*.

1327. **I**F from affections of the mind, too great thinness, or a too violent commotion of the blood, we must have recourse to preparations of barley, jellies, emulsions, opiates, and astringents.

If the strong passions of the mind may dissolve the connection of the placenta with the womb, and occasion a dangerous hæmorrhage, how much more is this to be feared, whilst after delivery the vessels are still open, or are so little contracted that the slightest cause is capable of dilating them again? See what has been said upon this subject at §. 1306. All emotions of the mind are therefore carefully to be guarded against; women with child should be restrained from any way concerning themselves with domestic affairs, they should not hear either of good or bad news, and the tranquillity of their minds, should upon no account be disturbed. It was by a prudent law provided at Harlem (a town in Holland), that nothing should be done at the time of a delivery, which might interrupt the necessary repose of the lying-in woman. A mark is put upon the door of a house in which a woman lies in, which being seen, no serjeant, beadle, or any other officer of justice, is allowed to enter that house. Such care the commonwealth has thought proper to take of that woman who gives a citizen to her country. The worthiest citizens, accustomed from their tender years to respect fruitful matrons, carefully keep every sort of noise from the neighbourhood,

hood. This must be acknowledged to be a noble example, and well worthy of imitation.

Too great thinness or a too violent commotion of the blood.] It is obvious what medicines are to be used upon this occasion; all those that correct humours too thin, and all those that check too rapid a motion, should then be applied. But we should here chiefly attend to those that are capable of effecting a contraction of the womb, and thus stopping up the gaping vessels; and as a syncope, and even sudden death, is to be apprehended in this case, a quick remedy is required. It was before observed, that the greatest masters of the art of midwifery were against separating the placenta from the womb, before it begins to contract itself, lest a dangerous hæmorrhage should be the consequence. They could easily form a judgment of this by touching the abdomen of the lying-in woman. Duffe^a, a skilful man-midwife, has shew a method, by which a too great evacuation of the womb after delivery may be diminished: he applied both hands to the outermost part of the abdomen of the lying-in woman, and gently pressed the womb; at the same time moving his hands over the whole outermost part of the womb, now in a circular manner, now from the right to the left, sometimes from the lower part upwards, and sometimes in the contrary direction; thus he in every direction endeavoured gently to press and to move the flaccid womb, that it might contract itself the more. Thus there came from it clotted lumps of blood, which if they were of a large size, so as to fill the womb in such a manner as to make it resist that soft pressure too much, should be first taken out by the hand; which subject has been treated of already. That ornament of the learned world, Fontenelle, has with his usual elegance, added, that but one fault can be found with this method, namely, that at the same time that it is perfectly simple, it is entirely free from every thing mysterious.

Mauriceau^b has observed, that too great evacuations

^a Acad. des Sciences, l'an 1724. Hist. p. 51.
malad. des femm. gross. liv. 3. chap. 5. p. 386, &c.

^b Traite des

ions after delivery are sometimes occasioned by the thick excrements accumulated in the great intestines at the time of pregnancy. He was called to the assistance of a lying-in woman, from whom the placenta had been taken in a rough manner, which had occasioned a violent hæmorrhage that lasted during five or six days. Although a few emollient clysters had been applied, no excrements came out; the clysters alone came out at the anus: contrary to the opinion of many who were present, he ordered a clyster somewhat stronger to be given the patient; and this had such an effect, that it filled the whole pelvis with hard excrements, upon which the swelling of the abdomen, that was before puffed up and affected with pain, immediately subsided, and the hæmorrhage ceased. He testifies likewise, that he afterwards had recourse to the same method with success, in order to diminish the too great evacuations after delivery; that is, if there was any room for a suspicion that a quantity of hard excrements remained in the great intestines.

If, after this, the evacuations after delivery still continued, he ordered the ticking to be taken away, and caused the lying-in woman to be placed upon straw covered with sheets only; to her loins he applied a cold mixture of vinegar and water; in winter, however, he ordered that it should be lukewarm; he gave her purgative juice to drink, and bound her loins with fresh knot-grass, which is called also *Centumnodia*. He at the same time sparingly administered broths and gellies; and so just preserved life that the vessels might have time to contract. For drink, he gave her a little red wine mixed with chalybeate-water. Sydenham^c recommends food somewhat nourishing; and, twice or three times a-day, six ounces of a drink made of an equal portion of red wine and plantain water boiled to three ounces, and then sweetened with sugar. Thus, much of the fragrant spirituous part of wine was evaporated, and there remained the rough astringent which is in red wine. I found good effects from diluting half an ounce of the tincture of cinnamon in

six ounces of distilled balm-water or the like, and giving a spoonful of such a mixture every two hours. Such a remedy cheers and strengthens; and yet does not hurt, by increasing the motion of the blood: the distilled water of cinnamon, and its oil, have a fragrant, aromatic, stimulating quality; but that rough, strengthening quality, together with the fragrance of the cinnamon, is to be found in the tincture, which seems therefore to deserve the preference.

But with regard to the efficacy of opiates and astringents in excessive evacuations of the lochia after delivery, see what has been said in §. 1307.

§. 1328. **T**HE choice of all these, we are taught by the symptoms of the disease, the constitution of the patient, and the acuteness of the disorder.

Thus if a too great evacuation after delivery, occasioned by the lumps of clotted blood retained in the womb, should continue, these are to be taken out with caution, as has been said; if this should be occasioned by a flaccid and feeble constitution, recourse should be had to strengthening cordials.

But if a great hæmorrhage should be occasioned by the womb's not contracting itself, the worst consequences are to be quickly dreaded; and for that reason the most efficacious remedies should be immediately applied: all these have been already treated of. We are now carefully to consider those ill consequences which generally follow the retention of the lochia which should be evacuated after delivery.

§. 1329. **W**HILE the serous milky fluid flows from the contracted vessels of the uterus into the breasts, there arises a slight fever, after which the lochia are often entirely suppressed; whence many symptoms of the worst kind arise, according as the lochial blood

blood is thrown upon the different viscera; hence
 frenzies, pleurifies, peripneumonies, quinries,
 inflammations of the diaphragm and breasts; a
 worse inflammation of the liver, stomach, o-
 mentum, mesentery, spleen, kidneys, intestines;
 hence arise dysenteries, cholics, the iliac pas-
 sion, apoplexies, palsies, and a great many more
 disorders.

It was before determined, at §. 1325. where too
 great evacuation after delivery was treated of, that
 the quantity of the lochia greatly varies, and cannot
 with exactness be ascertained; the same holds with
 regard to the time that these evacuations last. But
 as such and so great evils are to be apprehended from
 their suppression, it is worth while to consider those
 things which in the course of nature happen in child-
 bed.

As soon as the placenta is separated from the
 womb, a considerable quantity of pure, unmixed
 blood runs out; and the vessels being emptied of the
 blood which distended them, contract themselves:
 whence the hæmorrhage is quickly diminished; so
 that, a few hours after delivery, the redness of the
 lochia already begins to be lessened; and the red co-
 lour entirely disappears on the third, fourth, or even
 on the fifth day, (see §. 1325.) Particular notice
 should be taken of this, because I have sometimes
 known physicians dread the worst consequences at not
 seeing the sheets stained with red at the time of deli-
 very; from whence they inferred that a suppression of
 the evacuations after delivery was at hand, and they
 had recourse to all the efforts of art to renew them.
 But this diminution of the evacuations is natural, the
 vessels of the womb being contracted more and more.
 But as Hippocrates (see §. 1325.) has fixed a suffi-
 cient time for the evacuations after delivery; and
 others have thought, *emortuas menstruorum reliquias*,
 "That the dead leavings of the menses," being col-
 lected during the whole time of pregnancy, were in
 P 2 that

that manner poured out; thence arose so many complaints of the suppression of these evacuations. But bloody evacuations return soon after of their own accord, as has been likewise observed at §. 1325.

There seems therefore to be no reason to apprehend any danger, so be there are no other bad symptoms (of which hereafter), even if the evacuations should be at this time less frequent and not red. But that they should cease entirely, so that linen cloths, applied to the privy parts for some hours together, should continue dry; this is certainly a very bad symptom. For, in the common course of nature, that which flows from the womb has the resemblance of good pus^a, as well in colour as in thickness, and an insipid disagreeable smell. If all things turns out happily, such evacuations continue as it were purulent to the end of delivery; in such a manner, however, that the quantity is every day diminished.

It was before observed at §. 1304, where the dangerous hæmorrhage of the womb in women with child was treated of, that the surface of the chorion is every where connected to the cavity of the womb by a porous substance, through which the vessels pass from the womb to the chorion. “For the whole cavity of
“the womb displayed several vessels, filled, gaping
“with open mouths, with the remains of that porous
“substance which bound the egg: these were chiefly
“perceived in that place to which the placenta had
“stuck; and that place was almost the whole lower
“part of the womb, which in its situation looks towards
“the back, being large, and scarce less than
“the third part of the circumference of the womb.
“The internal surface of the womb, where it supported
“the placenta, appeared very uneven, and
“rose with a gentle swelling, ^b &c.” When therefore the surface of the womb, after the most natural delivery, has the remains of that torn, porous tunic, and the broken extremities of the vessels which pass from the womb to the chorion, especially in the place
to

^a Levret, l'art des accouch. p. 135, gravid., p. 12.

^b Noortwyck de utero.

to which the placenta stuck; it seems proper that the whole hollow surface of the womb should be cleansed of these, that it may return to its former state. But as this porous substance and the vessels, though they are of considerable size, are very tender; a gentle, and as it were superficial suppuration suffices, that these parts torn, and as it were half dead, may be separated from what are sound and well, and the stuffed vessels may in the place to which the placenta stuck be freed from the obstructing humour; so that thus, from all these dissolved together, may be produced a liquor resembling pus, which comes from the womb in the form of the things evacuated after delivery. Concerning these, see what has been said at §. 387.

But there cannot be made a separation of the chorion and the placenta from the womb, without the breaking of several vessels; whence there proceeds “a fresh and bloody solution of cohesion in a soft part;” that is, a wound. See §. 145. It is true indeed, that it is said in the definition of a wound, that such solution of cohesion is made, *a corpore duro, acuto, moto, presso, vel resistente*; “by a hard, sharp body, moved, pressed, or resisting;” which is added chiefly to distinguish it from a contusion: but it is obvious that the nature of a wound is not changed, whilst the cohesion of the vessels is taken away by pulling away the chorion, or by a separation ever so gentle, by which however the cohesion of the vessels is dissolved.

If therefore the phenomena of a wound enumerated at §. 158. are compared with what happens to women with child, all circumstances will be found exactly to agree; that is, as far as the condition of the place affected, and the cause of dissolved cohesion permit, and as far as a discovery can be made by the senses. For the blood at first runs out with violence: soon after, the flowing diminishes of its own accord, and at last is stopped: there grows upon an external wound, when left to itself, a crust of blood; which has no place here, as the internal surface of the womb is wet, and the free approach of the air is guarded a-

gainst: the womb being contracted, especially its orifice, warm linen cloths should be applied to the pudendum, lest the coldness of the air should prove hurtful. But a few hours after delivery, a diluted, red, and subtile liquor flows out. Just as, in a wound which lies open to the senses, the lips of the wound swell, are warm, feel pain, &c. (see §. 158, n^o 5.) something of the like nature seems to be effected in the womb, but in a slighter manner, because the injury is here superficial, but in a broad surface. We cannot indeed distinguish these things with our eyes; but it seems that it may be deduced from hence, that as in a wound, so when a woman is in labour, a slight fever comes on precisely at that time; and also on the third or fourth day, sooner or later, there is produced something of a purulent nature, nay sometimes true, genuine pus, with all its properties, which, being mixed with filth, and with the humour which transpires from the surface of the womb and the vagina, is sometimes somewhat different from good pus, though it is produced by the same causes. But when the pus appears in the wound, then the redness, warmth, pain, swelling, slight fever, &c. cease or are diminished. The same change is observed in women who lie in. We meet with an admirable account of this change in the evacuations after delivery, in Moschion: "At first there is blood voided," (the editor would have added, "pure and in a great quantity"); "then it becomes feculent and scanty, and at last purulent."^c

It hence appears to be very probable, that that fever in lying-in women, which is called the milk-fever, does not spring solely from the milk brought into the breasts, but also from the purifying of the womb by that gentle and superficial suppuration. But as even the best pus, when retained too long, becomes acrid and putrefies (see §. 406.) the same thing will hold with regard to the purulent evacuations after delivery, if they should be kept back. It at the same time ap-
 appears,

^c Spach. Gynæc. p. 5. n^o 56. et Harmon. Gynæc. part. prior. cap. 17.

ears, that such a purulent evacuation is not to be feared, as it is natural; which deserves to be attended to, as I have known not only the lying-in woman and her standers-by, but even physicians, alarmed thereby, and in fear that the womb was threatened by a dangerous ulcer: their fear was increased if a sort of a smell of putrefaction affected their noses, either on account of the linen rags not being often enough changed, or whilst some of the clotted blood too long remained in the hollow parts of the womb, and melting into rottenish corruption, came out. Sometimes there is clotted blood in the cavity of the womb; often in the very sinuses, made in the substance of the womb, which have been spoken of already, there remains some blood which afterwards gives a bad smell to the lochia. I have often had an opportunity of seeing what Levret^d has judiciously remarked upon, that the lochia had a bad smell; and that there appeared spots upon the linen rags, which were surrounded with a livid border, which remained till the clotted blood came out; or if it was inconsiderable, melting in the holes of the womb, was forced out along with the purulent matter; which being over, the stink ceased, and the usual smell, rather a disagreeable one, came from the linen. Hence we may guess the reason why they stink upon one day and not upon another, according as the linen rags are more frequently or more seldom changed, or any clotted blood lies hid in them.

But if that purulent matter does not come out, but, being sucked back, should be mixed with the humours, it may, being brought to the viscera by a bad metastasis of the morbid matter, give occasion to dangerous disorders. Hippocrates has pointed out this danger: *Those whose evacuations are white, when they are suppressed, are seized with a fever, a deafness, an acute pain in the sides, are troubled in mind, and find themselves very ill^e.* The same prognosticated symptoms.

^d L'art des accouch. p. 140.

^e Quibus ex partu prodeunt alba, his vero suppressis, cum febre furitudo, et dolor acutus ad latus, fit, mente moventur, et perniciose habent. Boerh. Prænot. n^o 525. Charter. Tom. VIII. p. 883.

toms are assigned in another place^f; and Galen, in his commentary upon this text, says, *When therefore this blood is not evacuated during the woman's lying-in, it either raises the womb itself with a great hot swelling, or, being carried to some higher seat, it communicates its own property and its own danger to the part which receives it; but which part it comes to, the symptoms which appear outwardly will indicate, as now the thorax and now the head will receive the vitiated blood brought upwards from the womb*^g.

It seems, therefore, that Hippocrates observed those white evacuations, and apprehended a dangerous change from their retention. But another text teaches us, that he looked upon them as purulent, and thought the womb ulcerated. These are his words: *If the wombs are ulcerated, and the evacuations after delivery do not come on as they should do, she will feel pain in all her parts; and if she is not troubled with great ulcers, she will soon be cured and recover her health*^h. He therefore admitted that slight and superficial suppuration of the womb, and the recovery that shortly after follows from thence, the womb being in that manner cleansed; he has distinguished it from the greater ulcer which follows a violent inflammation of the womb, and has its place not in its hollow surface, but in its substance. This is confirmed by what follows soon after: *But if the wombs are not inflamed, the mass which hurts them, comes out of its own accord; stinking and livid, or black and clotted, and the woman's evacuations are over*ⁱ. This perfectly agrees with what has been said already.

The

^f Hippoc. Prædict. lib. i. Textu 82. ibid. p. 752.

^g Quum igitur hic sanguis vacuatus non fuerit a mulieris puerperio, aut uterum ipsum in phlegmonem attollit magnam, aut, ad superiorem aliquam sedem vectus, parti excipienti proprium affectum, periculumque, adfert; ad quam autem pervenerit, mox apparentia symptomata indicabunt, quomodo et nunc, tum thorax tum caput, vitiosum sanguinem, ab utero sursum delatum, exceperint. *Ibid.*

^h Si ulcerati quidem uteri fuerint, neque puerperii purgamentæ, ut decet, adfuerint, omnibus partibus dolebit; et nisi magna ulcera adfuerint, curata brevi, sanitatem recipit. *De Mulier. Morb. lib. i. cap. 13. Charter. Tom. VII. p. 753.*

ⁱ Quod si uteri inflammati non fuerint, sua sponte exit malam; graveolens et lividum, aut nigrum et grumofum, existit, et mulier a lochiis purgatur. *Ibid. p. 754.*

The serous milky fluid flows into the breasts.] It has been frequently observed before, in treating of the diseases of virgins and pregnant women, that there is a manifest connection between the womb and the breasts; and for this reason it is generally made a maxim, that, when the vessels of the womb are close, the serous milky fluid flows into the breasts. But it is thought that this milky serum is carried to the womb at the time of pregnancy, as nourishment to the fetus. Whilst Noortwyck with caution separated the chorion from the womb, he found “in one place a little thickish white liquor poured out upon the chorion, which appeared to be somewhat like cream^k.” But though he in another place^l gives us to understand, that he never met with an author who asserted that he had seen such a flowing in any person; he thinks this opinion ought by no means to be treated with contempt. The most accurate Winslow testifies, that when pregnancy was far advanced, the lacteal ducts were formed in the womb^m. The celebrated Astrucⁿ confirms this; and says that he sees it with his eyes, if the womb of a woman who died in the last month of her pregnancy, or at the time of delivery, was inverted, and the whole internal surface to which the placenta does not stick was pressed, after being first cleansed; then a great quantity of drops of lacteal liquor oozes thro’ the smallest pores, which pores are the extremities of the vessels which separate this lacteal juice from the blood. But if such a womb should for a while be steeped in vinegar, and the internal tunic should afterwards be separated by the hand, numberless vessels appear to the sight, small, vermicular, white, exceeding a hog’s bristle in thickness, three, four, or five lines in length, full of a lacteal liquor, which flows from these vessels when hurt. From all this we may at least conclude, “That perhaps something of a nature similar to that of milk, may, according to the laws of nature, be brought into the egg; but that

“ the

^k Uteri humani gravidi hist. p. 10.
^l Ibid. Anatom. traite du bas Ventre, n^o 623. p. 577.
^m Ex-
ⁿ Traite
 des malad. des femmes. Tom. I. p. 12.

^l Ibid. p. 95.

^m Ex-
ⁿ Traite

“ the direct communication of the more remarkable
 “ arteries of the womb, with the vessels of the egg,
 “ renders that opinion very improbable, which sup-
 “ poses that nothing but lacteal humours enter there,
 “ as the blood flows with perfect freedom through
 “ much more diminutive vessels.” The reader may
 likewise consult what Rohault^p has said, in order to
 prove, that not only the chyle, but the blood, and like-
 wise the milk, comes from the mother to the fetus.
 For he admirably remarks, that, according to this opi-
 nion, the lacteal juice alone should run out, whilst
 the placenta is separated from the womb; which is re-
 pugnant to all observations.

The first rudiments of a human creature being ex-
 tremely tender, stands in need of much liquid, that
 it may be nourished and grow; but when the embryo
 is much increased in bulk, it seems to have occasion
 for more substantial food. When the time of preg-
 nancy is near expiring, it should be used to more so-
 lid food; it seems to be for this reason that the milk
 is prepared in some of the vessels of the womb, and
 perhaps in greater plenty when the time of delivery is
 near at hand. Hippocrates^q has made the following
 observations: *The fat growing warm and becoming
 white, what is sweetened by the warmth of the womb is
 strained into the breasts, and a small portion of it is car-
 ried into the womb by the same veins; for such veins and
 others like them proceed to the breasts and the womb. When
 it comes to the womb, it has the form of milk, and the fe-
 tus receives the benefit of some of it.* Then in another
 place, when he inquires into the causes which make
 the fetus try to get out of its mother's womb, he says,
*What is sweetest in the blood it attracts to itself, and at
 the same time feeds upon a small portion of milk.* When
 these

^o Noortwyck de utero gravido, p. 11.
 l'an 1714. Mem. p. 180, et seq.

^p Acad. des Sciences.

^q Pingui nempe incalescente, et candido effecto, quod uteri calore edul-
 catum est, in mammas expressum tendit, et in uteros quoque exigua por-
 tio per easdem venas deferitur; ad mammas enim et uteros ejusmodi ve-
 nulæ, et consimiles aliæ, ferentur. Quumque ad uteros pervenit, lactis
 formam habet, coque exiguo puer fruitur. *De Natura Pueri, cap. 7.*
Charter. Tom. V. p. 318.

se begin to grow scanty, and the child, being increased size, requires more nourishment than there is for it, irritating itself, and breaking the membranes, the child itself first urges its mother to delivery^r. But as nature attended the mother's milk for the child's food after delivery, it seems probable that the fetus, being grown in the mother's womb, receives a certain quantity of milk, that it may accustom itself to this food by degrees. In the mean time, whilst pregnancy lasts, the breasts are disposed in such a manner, that they begin to separate the milk from the blood; whence, in many women with child, a certain quantity of milk usually comes drop by drop from the breasts, especially towards the last months of pregnancy; for then, if delivery was to come on, the child might live if it were born in the seventh month, or not so soon, as has been said already. So that the dropping of milk from the breasts indicates, that an easy separation of milk then takes place, of part of which the fetus reaps the benefit in its mother's womb; which if it was entirely deprived of, it would become weaker, as wanting more substantial food. Hippocrates^s informs us of this in the following terms, as formerly mentioned: "If milk should flow copiously from the breasts of a woman with child, it is a sign that the fetus is weak. If the breasts are firm, it is a proof that the child is robust." But whilst the infant just born separated from all connection with the mother's womb, there is similar nourishment ready for it in the breasts; that is, milk; of which greater plenty is now required than when it clung to the womb, because it should now be nourished and grow by this alone, as no longer receives any thing from the mother by the umbilical vessels. Wherefore, at that time, the vessels of the womb being closed after delivery, that copious lacteal food flows to the breasts.

For

Quod enim in sanguine dulcissimum est, ad sese attrahit, simulque quantula lactis portione fruitur. Quæ quam ipsi pauciora sint, puerque jam plenior factus plus alimenti quam adsit requirat, ipse sese jactans, membranas disrumpens, initium partus matri inducit. *Ibid.*
p. 10. p. 322.

^s Aphor. 52. sect. 5. Charter. Tom. IX. p. 225.

For the vessels of the womb are less pressed whilst the breasts swell; and hence, as was said upon another occasion in treating of the menses, Hippocrates^t advised, “If you would stop a woman’s monthly evacuations, apply a cupping-glass of the largest size to her breasts.” On the other hand, he has elsewhere given us to understand^u, “If a woman who is neither pregnant, nor has brought forth, should have milk, her monthly evacuations have ceased:” For the vessels of the womb making too great resistance, the breasts are so swelled and filled, that the separation and secretion of the milk follows.

But whilst that serous lacteal food, not being able to make its way through the vessels of the womb now closed up, is carried to the breasts, there arise certain disturbances in the whole body, and there occur new symptoms worthy of consideration. There is generally a slight fever at the same time, which is by physicians called the *milk fever*.

In an hour or two after delivery, tranquillity is restored in all parts of the body; the pulse, which was high and extremely quick in the last efforts of delivery, soon returns to its natural state; and, if the woman just delivered should sleep for a few hours, she finds herself alert, freed from her burden, and scarcely complains of any thing, except of pains in her limbs, occasioned by the efforts she has made; and sometimes of a considerable swelling in the pudendum, a disorder which is easily cured by the application of softening fomentations. But upon the second, oftener upon the third, and sometimes upon the fourth day, her sleep becomes disturbed, attended with troublesome dreams, and sometimes she lies awake the whole night: she is seized with inquietude, and sometimes with a head-ach; the pulse rises, and becomes more quick; a tremor seizes her all along her backbone, between the shoulder-blades, and sometimes all over the body; there follows an increase of heat; the breasts begin to feel pain, to stretch, and to swell; breath-

^t Ibid. Aphor. 50. sect. 3. Ibid. p. 224.
p. 219.

^u Ibid. Aphor. 39.

breathing becomes more difficult; the evacuations are diminished; and at the same time the arms move with greater difficulty, on account of the tension of the adjacent parts. If, in these circumstances, lying-in women have repose, use a copious diluting and pleasing drink, and sparing food; in four and twenty hours all these discomposures are calmed by an equal and sufficiently copious sweating all over the body, especially about the chest, and the breasts swell with milk. In some women of an excellent constitution, this fever is found to be so slight, that besides passing the night a little uneasily, it is scarce of any signification, especially if they give their children suck; this I observed both in my own wife, and in many other women. It was customary with me, in twelve hours after delivery, to bring their new-born children to their breasts; when I thought that thin and serous milk which first comes from the breasts was highly beneficial to them, which I shall be treated of in the next chapter. The suction itself causes the milk to be more easily carried to the breasts, and the milk's being drawn from them prevents them from being too much swelled. But when the breasts swelled on a sudden, and could not be emptied by a weak child, being too turgid, I advised that another woman should in part evacuate them by a gentle suction, and then that the child should be brought to them. It is evident, that in those who decline giving suck to their own children, there occurs, *ceteris paribus*, a greater difficulty. For the milk already gathered in the breasts, should return again into the blood; and before this can happen, it sometimes stays a long time in the little lacteal tubes of the breasts, and many disorders follow, which shall be treated of hereafter. Whilst this was done, the swelling of the breasts again subsides, and the quantity of the evacuations are increased, which, as they now grow white at this time of childbed, the milk, being driven back, is said to be evacuated with them; but, as was said before, they come purulent from the womb, whilst its hollow surface is cleansed.

Authors have remarked, that the milk gathered in
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the breasts, being driven back into the blood, afterwards comes out by various ways: it was thought the most natural way of all, if it came out through the vessels of the womb in the form of lochia: it has often been observed to come out with the urine^v, with the excrements in like manner, sometimes likewise by sweating; yet I doubt whether sweats truly lacteal, have been observed in women who have brought forth. It is acknowledged however, that milk sometimes disappears without any sensible evacuation of it being observed^w. Nor will this seem surprising, if we consider that milk is a healthy humour, that is, chyle mixed with other humours, and with these conducted through the vessels and the viscera, that it may after a few hours acquire the nature of our humours, and be thoroughly assimilated to them by the reiterated action of our vessels and viscera. We all live by our own milk; but it is not always separated from the blood, and collected in the breasts: but in women with child, and lying-in women, alone, this happens naturally. For the milk flows with the blood a few hours after they have eat; and if they are bled at this time, the milk is generally found mixed with the serum of the blood. We are therefore the less surprised, that, by strong and reiterated suction, milk has sometimes come from pure virgins; and even from men, when they have given their breasts to famished and forward children. Many such cases are related in medical history. If therefore the milk has not degenerated by making a long stay in the breasts, or if its nature has not been changed by a violent fever, it will not disturb any of the body's functions whilst it is again mixed with the blood. But if the milk should begin any way to degenerate from the healthy humours, the vitious part may be easily thrown off by urine or other excretions. Levret^x observed, that whilst the milk fever is diminished, there generally follows a sweat, which gives rise to a troublesome sense of pricking in the skin, though

^v *Peu pratique des accouchm.* p. 214.
^x *L'Art des accouchm.* p. 135.

^w *Ibid.* p. 215.

though the quantity of the lochia be generally at the same time increased. But the belly, which was before somewhat bound, becomes more relaxed, or at least is easily evacuated with the slightest stimulating: if the sweating should be discontinued, then urine, somewhat troubled, flows out plentifully; but if the sweats continue, the urine becomes of a higher colour, and comes out but sparingly, and its nature always corresponds with that of the liquors used by the young-in women.

But, by the laws of nature, such things as would injure the health if they staid over long in the body, come out of it by stool or urine, or thro' the surface of the skin. From all these particulars it is easy to deduce the reason why the milk sometimes returns into the blood without doing any hurt to speak of.

But something else obtains in women with child, which deserves our attentive consideration. It is well known, that, in some disorders, the milk separates from the blood with great ease, and comes out of the body with great hurt to it. Thus, in the diabetes, the urine is sometimes observed to be milky; which if it should be copious, or should be long excerned in that manner, it deprives the body of nutrition: and a person thus disordered, dies of a consuming fever. Such a chylous looseness has likewise been observed. This easy separation of the milk from the blood is a disease.

But in childbed women this easy separation of the milk from the blood seems to be established by a natural law, that it may serve as food for the new-born child. I do not here speak of the causes from whence this may take its rise; it is enough for the physician to know what happens in the body, though he does not always perfectly understand the reason of the phenomenon. We ought always be mindful of the wholesome advice of Celsus: "I am of opinion
" that physic should be rational: that it should
" proceed upon evident causes; all obscure causes
" being excluded, not indeed entirely from the artist's

“ thoughts, but from the art itself ^y.” When therefore sure observations teach us, that an easy separation of the milk from the blood, which began at the latter end of the time of pregnancy, is approaching; and it is likewise known, that, by the laws of nature, the milk separated from the blood is gathered into the breasts; it is evident, that if the flowing of the milk into the breasts is hindered, or if, being gathered there, it is not brought out by the breasts, something bad is to be feared, either in the breasts themselves, or even in the rest of the body, if the milk secreted from the blood should be deposited at improper places.

Levret ^z justly apprehended fatal consequences, if, the evacuations after delivery being scanty, the breasts should not swell at the usual time; especially if there should appear the slightest symptoms of an approaching delirium, or if they should begin to speak indistinctly. Some are seized with a violent head-ach; and that so suddenly, that they think themselves struck by something external: there follows a tingling of the ears, a deep sleep, a snoring, involuntary laughter, an agitation of the tendons, strong convulsions, and sudden death. After death, milky matter has been often found in the skull. He has likewise seen acute disorders of the breast in women who had been delivered ^a, which he with good reason attributed to the same cause; for he had seen the breasts flaccid, when these disorders were coming on; but when, by good luck, the breasts swelled again, a cure quickly followed. But such a change of the place of the milk is sometimes effected in the pelvis ^b: but this seldom happens before the twelfth or fifteenth day after delivery, if there be a milk-fever in the case; and the breasts should swell. But this easy separation of the milk from the blood lasts a long time in women who give their own children suck. Such a removal of the milk to the pelvis, happened to a woman a year after delivery; but a fortnight before, she lost the child; to whom, till then, she gave suck. He observed, how-

^y In fine præfat. p. 20.

^z L'art des accouch. p. 146, 147.

^a Ibid. p. 149.

^b Ibid. p. 150, et seq.

However, that such a change is generally effected in fifteen days after the breasts have begun to grow flaccid; and that even in women who have not given suck, but whose milk has come drop by drop through the breasts. This has been confirmed by many observations; and such a change never happened much sooner, except in those in whom the milk had not been carried to the breasts, but rather tended immediately to other places. That milky matter is then usually gathered in the porous tunic, by which the peritonæum is joined to the pelvis, or between the muscle psoa and the iliac muscle about the broad ligaments, and sometimes in many places at a time. Whilst this comes to pass, there is felt a dead pain about the groin, a weight in the pelvis, and a weakness of the thighs. If she lies down upon her back with her thighs extended, she feels more uneasiness than if they were bent. These symptoms but rarely appear on both sides at a time; but whilst the patient endeavours to divert them on one side, similar symptoms follow on the other side. This milky matter afterwards proceeds to the thigh, and distends the cellular tunic; at last the same symptoms are observed in the leg and foot; and thus all these parts swell, and the pains which had before been felt about the pelvis are allayed. When such an œdema begins to subside, first ceases in the thighs, then in the legs and feet, in like manner as has been said in treating of the universal dropsey of the whole body called Anasarca. I have sometimes seen such swellings at the time of delivery: whilst they are pressed with the fingers, the holes are not observed as in the anasarca; but the tumour resists more, and they are generally happily removed in ten or twelve days by milk fomentations, and a decoction of Venetian soap; especially if there comes out copious thick urine, at first troubled, but on the succeeding days laying aside much of its sediment.

But such a secretion of the milky matter is sometimes made in other parts of the body not to be dissipated any more. Thus that excellent physician Cho-

mel^c observed, in a woman who had lain in for the first time, that the belly had swelled in such a manner, that, three weeks after delivery, it was almost as big as at the latter end of pregnancy. The navel having broke of its own accord, a large quantity of milky and serous matter, but of a very bad smell and a greyish colour, came out: two months after the breaking of the navel, the patient with proper care recovered, being perfectly cured. That celebrated physician was of opinion, that this change happened within the folds of the peritonæum. He at the same time remarks, that he had, in two women who had been delivered, observed the thighs to have been very much swelled; these swellings he ascribes to the suppression of the evacuations after delivery, and acknowledges, that he could not without difficulty dispel them; such tumours, however, seem rather to proceed from the milk's changing its place. Did Ruysch observe something of this nature gathered in the abdomen? He had visited a lying-in woman who was in a high fever, and who complained of a violent pain in the outermost part of the abdomen, together with a stretching and a hardness: "In the abdomen of the body, he found much fetid matter, something resembling the washings of flesh or putrefied lochia; such as has been found by me in the cavity of the womb^d." But he was of opinion, that that fluid, which floated in the pelvis, passed from the womb into the abdomen, by the Fallopian tubes.

Practical observations of the most able physicians shew, that a metastasis of the milk sometimes occupies various viscera^c. In the winter of the year 1746, an epidemical disease was observed in women with child. Humours, whilst they were in labour, run from them; and afterwards the womb, which was dry, hard, and full of pain, swelled; nor were the evacuations made in the usual manner. The disorder began with a looseness; a pain in the belly followed, especially

^c Acad. des Sciences, l'an 1728. Mem. p. 581, et seq. ^d Observat. Anat. Chirurg. n^o 84. p. 79. ^e Acad. des Sciences, l'an 1746, in 4to. Mem. p. 160.

ally in that part which is occupied by the broad ligaments of the womb; the abdomen was stretched; there was a pain at the heart; and sometimes a cough. Upon the third or fourth day after delivery, the breasts, which generally swell at that time, grew flaccid; and on the third or seventh day, the woman died. This disease attacked the poor alone; especially if they had been delivered in an hospital. In the month of February, the disease was so dangerous, that scarcely one escaped out of twenty. In the corpses there was found a coagulation of the milk sticking to the external surface of the intestines, and milky serum poured out in the hollow of the abdomen: a serum of the like nature was found, in some, in the cavity of the breast; and whilst their lungs were cut, they threw up a sort of milky, but putrid lymph. The ventricle, the intestines, and the womb, being properly examined, seemed to have suffered inflammation, and lumps of clotted blood came from the dissected canals of the womb: and in many there seemed to have been a suppuration of the ovaries.

May it not be concluded from what has been already said, that a change of the milk's place may produce all the disorders enumerated in the text, which are usually attributed to the suppression of the evacuations after delivery; according as the milky matter is thrown into these parts or those, and indeed with the greatest danger the more the parts into which it is thrown are necessary to life, as also if this matter be thrown into such places from whence it will be with difficulty forced out? Thus, for example, when it is thrown into the legs and thighs, there is great hope that this matter may by fomentations, frictions, &c. be brought to such a state, that it may again be conducted through the several passages of the body, and driven out by stool, urine, and above all by sweats. But when it ascends to the cavity of the skull, death quickly follows. It is at the same time evident, that we should carefully distinguish that swelling of the legs and thighs which follows delivery, from a similar swelling which in women with child takes its rise from the womb's swell-

swelling and compressing the veins; which generally ceases of its own accord after delivery, whilst the womb subsides. For the first begins from the thighs, and then descends to the lower parts, makes greater resistance to the touch of the fingers, and, the pressure ceasing, no holes are left behind: the last begins from the lower parts, ascends more slowly, is softer, and yields with greater ease to the pressing finger; for it is a true anasarca sprung from the compression of the veins.

At the same time it is evident, that women who give suck to their children, run less risk from this cause, than those who decline doing it. The suction itself brings the milk into the breasts; but the keeping back such a change in the place of the milk, is dangerous.

I am not however of opinion, that the retention of the evacuations after delivery is attended with no danger at all; but I thought it necessary to hint, that it was proper to take into consideration the milky matter's being deposited in several different parts of the body. For the evacuations after delivery are, according to the course of nature, diminished at the time that the milk-fever generally begins; and they scarcely then flow out bloody, but rather somewhat purulent. On the first days of childbed there seems to be greater danger to be apprehended from the retention of the secundines: but less on the following days, after the milk-fever; but so, however, that if that purulent matter, which then usually runs out, be retained, there is great danger to be feared from its being carried back into the blood. Add to this, that the womb being hurt at delivery, an inflammation in it may often be the consequence; hence the evacuations after delivery are suppressed: of which we shall now speak.

Whilst the placenta is separated upon the exclusion of the fetus, a certain quantity of blood runs out, which is soon afterwards diminished, and then the lochia are stained with a less deep red. The air has then free access, nor can it be afterwards excluded; hence

ence there is reason to fear a sudden putrefaction of the blood, and other humours which are retained, either in the cavity of the womb, or in the hollows which are in the very substance of the womb. The warmth of the place, the humidity, the approach of the air, are in every respect favourable to the putrefaction of the extravasated and stagnating humours: the same thing is to be feared from the remains of the dissolved placenta; for whilst it still sticks entire to the womb, we may imagine that the humours are still carried through the placenta, and that therefore it does not rot so soon. But if the extravasated humours come out freely, there will be nothing to be apprehended from putrefaction. We should chiefly dread consequences from a too long delay in the cavity, in the recesses of the womb; lest the extravasated humours should rot, should injure the womb itself, or being carried back should cause malignant fevers, or being deposited in other parts of the body should infect them with putrefaction. For if so many and so great evils arise from a mild milky matter, what may there not be apprehended from a putrid humour? Hippocrates has described this corruption of the retained lochia; and has given us to understand, that the womb is ulcerated by them, and that a dangerous fever is occasioned by the resorption of this putrefaction. The only hope of cure he seemed to have, was from throwing this putrefaction out of the body, before it had infected the whole mass of blood: *Upon the fifth or the seventh day, from time to time, black stuff of a very bad smell is voided, and urine like that of an ass. If these are voided, the patient seems to be better, and, being cured, quickly recovers; if not, she will be in great danger through a violent flux, by which she will be seized.* The looseness by which, before the patient's strength is quite broken, that corruption is thrown off, is salutary; but when, the disease being long protracted, al-

Quintoa ut septimo die, quandoque venter turbatur, et nigra et admodum graveolentia alias atque alias secedunt, et urina quidem asinina. Quæ secesserint, melius illi esse videtur et curata brevi convalescit; sin minus, periclitabitur vehementi alvi profluvio ipsi succedente. *De Mulier. lib. i. cap. 37, 38. Charter. Tom. VII. p. 752.*

almost all the humours of the body are resolved into putrefaction, then they generally perish by a violent flux. From whence at the same time it appears, that every flux is not to be dreaded during childbed; yet this opinion has possessed the minds of many, when they have seen women, after the labour is over, at last perish by a violent flux occasioned by the suppression of the lochia. I very well remember, that, whilst I took care of a woman that was just delivered of twins, I was very ill received by those present, because I was unwilling to stop the flux. On the third day, the evacuations were entirely suppressed; the belly was hard, and suffered pain. The softest fomentations being applied, the most gentle opening decoctions being copiously drank, green excrements extremely stinking were voided, the patient seemed to have received great ease, and in a short time recovered.

Hippocrates^s has demonstrated, that the worst fevers are occasioned by the suppression of the evacuations after delivery, from the example of a woman who lay in at the cold spring in the island of Thasus, was delivered of a daughter, and yet had not been cleared of her secundines. On the third day after her delivery, she was seized with a dreadful acute fever, (*πριωδός*), she was troubled with deliriums, and her bowels were disordered with much thin matter mixed with aqueous bile. She was free from thirst, and many bad symptoms followed each other: after many critical but imperfect efforts, after the lochia had been transferred to the right hip but without any good effect, after several variations of the fever, she at last died upon the eightieth day. Hippocrates remarked, that her urine was always black, thin, and watery.

But it is uncommon for this fatal disorder to be protracted for so long a time; as Hippocrates has said in another place, speaking of the suppression of the evacuations after delivery: *They die some at one time, some at another, according to the state their body and their passions are in. But they do not pass one and twenty days.*

^s Epidemic. lib. iii. textu 62. ægrot. 2. Charter. Tom. IX. p. 294.

ys. It generally happens so^h. In his treatise upon epidemic disordersⁱ, we meet with an account of a woman who was with difficulty delivered of twins, who had not entirely got rid of the lochia; on the first day she was attacked with an acute fever, attended with watchings, pains of the head and neck, a delirium, urine thin and watery, afterwards black, and other bad symptoms; this woman, on the sixteenth day, died in frenzy. This is confirmed by the observations of Sydenham. He treated the suppression of the lochia with the utmost caution; and if he could not cure the disease immediately, he endeavoured to protract it; as a cure becomes every day less precarious; and if the person disordered passes the twentieth day, she is in a manner out of danger^k." This method of Sydenham seems pretty much to coincide with the text of Hippocrates^l; especially if, according to the Vatican edition, instead of *αι μητραι η βιασθειςαι*, we read *μη βιασθειςαι*; for then the meaning is: *If she should have a purging, whether occasioned by medicines, or coming on of its own accord; for that happens if the uterine vessels are relaxed, their mouths not being forced thereto by the blood suddenly brought thither in great quantities; I say, such a purging should come on, fetid and purulent excrements are purged off; sometimes also they are black; and then the patient will get better, and recover perfectly if taken proper care of^m.* These things correspond perfectly with what has been said a little higher: For there come out purulent excrements of a nasty smell; and if the clotted blood, melting when the putrefaction begins, should come out at the same time, there is a stink; and the spots found upon the linen are surrounded

^h Moriuntur autem aliæ alio tempore, prout corpus et affectio se habent. Verum unum et vigesimum diem non excedunt. Frequentius ita accidit. *De Mulier. Morb. lib. i. cap. 37. p. 751.*

ⁱ Lib. iii. Textu 39. ægrot. 14. Charter. Tom. IX. p. 308. ^k Diffinitio. *epistol. p. 535.*

^l *De Mulier. Morb. lib. ii. cap. 37. Charter. Tom. VII. p. 751.*

^m At si illi vel medicamentis vel sponte purgatio eruperit; id etenim accidit, si uteri os suum relaxaverint, non coacti a sanguine repente confertim delato: si inquam, eruperit, graveolentia et purulenta repurgetur, interdumque etiam nigra; tumque melius erit, et adhibita cura convalescent. *Ibid. p. 900. n^o 207.*

rounded with a livid circle, and sometimes with a black one.

The suppression of the evacuations after delivery, is owing to two causes: for either they do not fall down into the cavity of the womb; or they are collected in the womb, and cannot come out if they have grown into large clots of blood, or if their passing through the orifice of the womb should be obstructed by any cause whatever: *When a woman has a purgation after delivery, it does not come out in a great quantity; the uteri being inflamed, and their mouths being shut. But the stomach, i. e. the neck of the womb, sinks down upon itself every wayⁿ.* Men skilled in midwifery have observed, that after delivery, and the pulling out of the placenta, the neck of the matrix, like a little intestine, is found hanging in the upper part of the vagina, and is sometimes by ignorant midwives taken for a body not belonging to that place, which they by a very pernicious and dangerous error endeavour to pull away. But as the patulent vessels are sufficiently wide towards the cavity of the womb, the humours have a passage free enough to come into that cavity: except an inflammation quickly following should cause the substance of the womb to swell, and thus these vessels should quickly be closed; hence an inflammation of the womb is justly looked upon as a very common cause of the suppression of the evacuations after delivery. Of this we shall speak hereafter. If the mouth of the womb should be stopped up with lumps of clotted blood, these should be taken out. See what has been said upon this subject at §. 1322, 1326.

But Hippocrates has likewise observed, that the pudendum was closed at the time of delivery; which obstructed the free passage of the secundines: at the same time, however, such a preternatural closing of the womb might be the effect of such a suppression of the evacuations after delivery. His words are as follows: *If any part of the pudendum should be stopped up,*
for

ⁿ Quum mulieri a partu purgatio fuit, non copiose procedit, inflammationis nimirum uteris, eorumque oscula concluso. Uteri autem stomachus (collum) in se concidit undique. *Ibid.* p. 751.

(for I have likewise seen that), if the mouth of the pudendum be ulcerated, and when it is ulcerated at delivery by the child's coming out by force, and there arise pimples and a violent inflammation, and when the lips, being ulcerated by inflammation, fall upon each other, and stick together. But there also arises a coldness, and both the lips are shut, whereby they press the remains of the lochia. But if the evacuation continued, the ulcers would not grow together°. How such a disorder should be treated, was shewn in §. 1290, and §. 1315.

It was before said, at §. 1290. where the causes of the retention of the menses were treated of, that the free flowing of the menses may be obstructed by the disadvantageous situation of the mouth of the uterus. It was also observed, when difficult delivery was treated of, that the oblique situation of the womb was often a cause of a woman's being delivered with difficulty. But Hippocrates ascribes the obstruction of the evacuations after delivery to the same cause: *If after delivery the uteri are turned to the right, the evacuations do not go on freely; pain seizes upon the lower part of the belly, the loins, and the bowels; the right leg feels pain; a numbness seizes, &c. If the uteri should decline towards the left of the hip, an acute and violent pain seizes on the loins, the flanks, and the leg, and the patient becomes lame*^P.

It is very obvious that the same thing is to be apprehended in any other untoward situation of the uterus. For if the orifice of the uterus does not exactly answer to the vagina, the evacuations will be made with greater difficulty; nay, they may be entirely suppressed,

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pressed,

° Si puerperæ aliqua pudendi pars obturata fuerit (jam vero et id vidi), si os pudendi ulceratum fuerit, et ubi in partu, per vim egresso puero, ulceratum fuerit, contingitque quid aphthæ simile, valdeque inflammatur, et labra ex inflammatione, quum nimirum exulcerata fuerint, in sese concidunt, mutuoque coherent. Sed et frigus fit, et ambo labra occlusa sunt, quæ purgationis reliquias constringunt. Quod si purgatio prodiret, ulcera non itaque coalescerint. *De Morb. Mulier. lib. i. cap. 44. Charter. Tom. VII. p. 754.*

P Si ex partu uteri in dexteram obversi fuerint, puerperii purgamenta non eunt; dolor imum ventrem, lumbos, et ilia, detinet; crus dexterum gravatur, et torpor occupat, &c. Si uteri in sinistram partem, aut coxam, declinarint, dolor acutus et vehemens lumbos ac ilia, crurisque, detinet et claudicat. *De Mulier. Morb. lib. ii. cap. 28. p. 816.*

pressed, if the mouth of the uterus, being pressed against the adjacent parts, should be closed. How this turning of the uterus should be remedied, has been shewn at §. 1321.

But that suppression of the evacuations, which is occasioned by an inflammation of the uterus, is most of all to be feared. In a difficult delivery, as has been said already, such violence is done to the uterus, that it is sometimes broken: the head of the child, if it be of a bulk any way considerable, in its passage, often bruises, and even tears, the mouth of the uterus; the substance of the uterus is often injured likewise, by the placenta's being taken out with a rough hand by an unskilful midwife; so that it is not to be wondered at that the uterus is inflamed after delivery, and that the evacuations are suppressed by such an inflammatory swelling. Such inflammations of the womb are with difficulty cured; but they often proceed to suppuration, and sometimes to a gangrene, which causes death. Hippocrates, speaking of an ulcer in the womb, says: *But this disorder chiefly comes on after delivery, if any thing being torn in them has rotted*^q. If therefore such causes have preceded as might occasion an injury to the uterus, then there is reason to fear that an inflammation of the uterus may follow.

Hippocrates enumerates the following symptoms of this disorder: *If the uterus should be inflamed, it is torn; but if any thing should be corrupted, and should grow raw, an acute and violent fever ensues, and a strong shuddering seizes the parts about the pudendum; it is affected in a strange manner, pinched, and agitated. But if any one should touch it with the finger, it becomes worse, and feels a pricking; the head and its fore-part ach; there is a mist before the eyes, and sweating of the forehead; the extremities are cold, and tremble; sometimes, too, sleep seizes the patient; she cannot hear, nor does the uterus effect any thing; all food becomes tasteless; neither the stomach nor the belly attract the food; they roar out, leap about, feel pains in their posteriors, their groin, and their*

^q Morbus autem præcipue ex partu invadit, si quid in ipsis dilaniatum computruerit. *Ibid. lib. i. cap. 63. p. 765.*

their loins, and in a short time die^r. We meet with something of the same nature in another place, where he describes the ill consequences which arise, *si uteri ex partu inflammati fuerint*, “ if the uteri should “ be inflamed by delivery.” He likewise adds some farther observations: *The heat from the belly never ceases, the patient thirsts, and her hips are in pain, the bottom of her belly swells excessively, her stools are irregular, what she discharges is bad and of a bad smell^s.* In Aëtius^t, besides the general symptoms of an inflamed uterus, those are enumerated which denote the different parts of the uterus which are invaded by the disease. Thus if the cavity of the uterus or its bottom should be inflamed, he tells us that great pain approaches; “ so that frequently the patient cannot bear to be “ touched externally.” If an inflammation should seize upon the hind part of the womb, “ the loins “ will be more and more pained, and the hard excre- “ ments will be voided with difficulty, because the “ rectum is oppressed.” If the foremost and lower region of the uterus should be inflamed, there will be a difficulty of urine for the same reason: “ If it should “ seize the oblique parts, the groins are extended, “ and the legs moved up with difficulty.”

Hippocrates^u has observed, that the belly and the bladder are bound by the scantiness of the evacuations after delivery; and in another place^v, that an inflammation of the womb is succeeded by a strangury.

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^r Si inflammatus fuerit uterus, vellicatur; quod si quid corruptum fuerit, et recruduerit, febris corripit acuta et magna, horrorque durus partes circa pudenda; ferociter afficitur, mordetur, et concitatur. Ac si quis digito contigerit, rursus pejus habet, et pungitur caput, et sinaput dolet, tum caligo, tum frontis sudor adest, extrema perfrigerantur ac tremunt, interdum etiam sopor occupat, neque audire potest, neque aliquid uterus efficit; multum est cibi fastidium, neque stomachus, neque venter, omnino cibum attrahit; vociferatur, proflit, dolet pubem, inguina, lumbos, et occultos pudendi locos; celeriterque intereunt. *De Mulier. Morb. lib. ii. cap. 50. Charter. Tom. VII. p. 827.*

^s Ex ventre vero incendium nunquam desinit, sitit, et coxendices dolent, imus venter vehementer intumescit, et alvus turbatur; dejectio mala est, graveolens. *Ibid. lib. i. de Morb. Mulier. cap. 54. p. 758. et cap. 55, 56. p. 759.*

^t Lib. xvi. cap. 85. p. 162.
cap. 36. Charter. Tom. VII. p. 750.
Charter. Tom. IX. p. 230.

^u De Mulier. Morb. lib. i.
^v Aphor. 58. sect. 5.

All these symptoms of an inflamed uterus are to be found judiciously collected by Moschion^w: where is added, from an observation of Cleopatra's, That, the uterus being inflamed, the tongue is found rough and black, as if it had been stained with ink; and that there is a pain in the extremities of the fingers and the nails^x. All these bad symptoms, which usually accompany an inflammation of the uterus, have been observed by later physicians.

If we consider what has been said at §. 1285, 1293. of that surprising power by which a disordered uterus can disturb all the functions of the body, it will not seem extraordinary, that an inflammation of it should be attended with such a variety of symptoms. At the same time it is worthy of notice, as the celebrated Simpson^y has remarked, that the uterus at the time of childbed, is more easily irritated than at other times; and that hence by the slightest stimulating, or a passion of the mind, it is so bound, that the evacuations are instantly suppressed, and many ill consequences follow. Hippocrates, after having enumerated the various ill consequences, which follow if the lochia are not thoroughly purged off, assigns this reason: *For as they are in a soft and very sensible part and in a nervous cavity, and many parts communicate with it, the back of the head, the stomach, the mind is struck, is injured, nor can it easily understand*^z.

From hence likewise it appears, why men skilled in treating women in labour, are apprehensive of danger, if the quickness of the pulse, which arises at the time of delivery, is not allayed the first hour after delivery: for then there follows an acute disorder; and an inflammation of the uterus, with all its dreadful consequences, may justly be feared². The text of Hip-

^w Spach. Gynæc. p. 12, 13. et Harmon. Gynæc. p. 23. ^x Harmon. Gynæc. pars poster. cap. 10. p. 28. ^y An inquiry in five essays, p. 67.

^z Quippe cum in molli parte et bene sensili existant, et in nervosa cavitate, multæ autem cum ea partes communicent, sinciput, stomachus, mens percellitur, depravatur, nec facile intelligere solet. *De Mulier. Morb. lib. i. cap. 42, Charier. Tom. VII. p. 753.*

² Levret, l'art des accouch. p. 134.

Hippocrates^b, where he treats of the crises and critical days of fevers, seems to refer to this; for he afterwards adds, “For in the same manner crises happen to women after delivery.” But this seems to obtain if they be seized with an acute disorder after delivery; which chiefly happens after a difficult delivery, the uterus being injured. Galen^c seems to confirm this in his commentary. These are his words: “You should begin to reckon from the day upon which the woman was brought to bed, not from the day on which her fever began: for some, on the second or third day after delivery, are seized with a fever, and most physicians compute the crisis coming on from that. But the case is otherwise, as the computation should be begun from the day on which the child was born.” For the milk-fever, which begins on the second or third day, soon ceases by a gentle sweat, without any critical discomposures. Thus, in the text of Hippocrates cited a while ago, a woman who had been delivered of twin-daughters, but with difficulty, was upon the first day attacked by an acute fever; and bad symptoms having occurred on the eleventh and fourteenth days, she died raving mad on the seventeenth day. Also that woman who was brought to bed in the island of Thasus, of whom mention has been made, is said to have been attacked by an acute fever on the third day after delivery; yet Hippocrates seems to have computed the course of the disease from the day of delivery. For he remarks that, *A long time before delivery, she was taken ill of a fever, and loathed her food*^e: nor is it credible that that fever ceased immediately after delivery, but with a horror degenerated into an acute fever; which however partook of the nature of the slow fever which had afflicted her before delivery, as she died upon the eightieth day^e.

From hence it is evident, that the suppression of

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the

^b In prognost. Charter. Tom. VIII. p. 668. ^c Ibid.

^d Multo tamen ante partum febriculosa decubuerat, cibumque fastidi-
erat. *Ibid.*

^e Epidemic. lib. iii. textu 62. ægrot. 2. Charter. Tom. IX.

the evacuations after delivery, is justly looked upon as dangerous: “ For except a woman be freed from her lochia, she will be seized with a great disease, and her life will be in danger if she is not quickly cured, and if some one does not promote her purgation in a proper manner.” Above all, if an inflammation of the womb should be the cause or the consequence of a suppression of the evacuations after delivery, “ most of the patients perish, if they are not immediately cured^f.” To this the following prognostic seems to refer: *A hardness of the uterus attended with pain is exceeding dangerous^g.*

We have hitherto chiefly spoken of those disorders which arise from the ill condition of the uterus, and the retention of the lochia, as likewise of those which arise from a removal of the milky matter to another place. But it is easy to conceive, that the retained lochia themselves, being rendered more sharp by delay, being sucked in by the vessels of the uterus, and afterwards deposited on the several viscera, may produce most dangerous diseases. The celebrated physician Targioni Tozzetti^h, well known in the learned world by many other writings, has inserted amongst his observations one or two which relate to this, and which he has taken from an anatomical and physical treatise of an author who is not certainly known, who lived in the sixteenth century, and seems to have faithfully related those things which he had seen with his own eyes; at the same time he added very elegant figures of the parts which he treats of. He dissected the body of a woman, who, the day after her delivery, was seized with a violent epilepsy, in so much that she bit off her tongue; afterwards she died of an apoplexy, having for three days together remained speechless. He found the uterus swelled above the thickness of a thumb's breadth in substance, hard, fleshy; the spermatic vessels were of the thickness.

^f Hippocr. de Morb. Mulier. lib. i. cap. 54. Charter. Tom. VII. p. 758.

^g Uterinæ in ventribus durities cum dolore, acute perniciosum. *Quac. Prenot. n° 528. Charter. Tom. VIII. p. 883.*

^h Prima Raccolta di osservazione mediche, p. 92, &c.

ness of a thumb's breadth, swelled, darkish, as it were filled with clotted blood, which after delivery should have been voided by the uterus; the testes, which are generally called the horns of the uterus, he found swelled. In the cavity of the uterus he found thick, black blood, sticking so fast to the cotyledones that it could scarce be forced from thence; this seemed putrefied: "The cotyledones are little mouths of the
" veins of the uterus, so that they seem blackish
" points. But the flesh or the fleshy substance of the
" uterus was white and hard, and through it the ar-
" teries and the veins passed, as this book would ap-
" pear if a person should pierce the paper with a
" needle; and when the flesh was cut across, the
" blood spurted out, as if it had been pierced with a
" needle extremely sharp. The mouth of the uterus
" had, as it were, two little muscles within itself, so
" thin that they seemed to be the parts of some mem-
" brane, which close the mouth on either side in such
" a manner, that even a needle cannot be thrust into
" it whilst the woman is big with child: master
" William the barber demonstrated this to me, &c." Hence he inferred, that this woman died of a retention of the lochia, which on the first day had flowed copiously enough, the matter being transferred to the brain: at the same time he remarks, that she a year before had had some epileptic convulsions at night: "He also conjectured that she had great pain, in de-
" livery, at the mouth of the uterus; for it was en-
" tirely livid, as if it had been bruised with a stick or
" a stone." He was surprised, in the dissection of the head, when the pericranium was separated from the skull, "that it poured out so much watery, thin,
" and serous blood, so that the skull seemed to re-
" semble a sieve, and it flowed from the bone itself;
" nor was I mistaken; and that skull seemed to be as
" it were bored; and it was of a darkish, livid colour;
" and we perceived that the veins of the dura mater
" were the cause of this flowing and gushing out of
" blood, &c." He then adds: "I have likewise remark-
" ed, that whilst the pericranium was separated from
" the

“ the skull, something rotten seemed to be pulled from
 “ the bone with as much ease, as if something putrefied
 “ had been separated from the bone.” Upon this occa-
 sion, the pericranium, the skull, and the dura mater,
 seem to have been chiefly injured ; for he mentions
 nothing of the other parts contained in the hollow of
 the skull. But soon after he adds what follows: “ In
 “ a gentlewoman of Mauvoisin, who died after deli-
 “ very of epilepsy and apoplexy, I observed upon dis-
 “ section, that the whole left ventricle of the brain
 “ was full of a watery, serous, putrid blood, of a bad
 “ colour ; and that the veins of the membrane, for-
 “ med like a net, were swelled as well as the arteries,
 “ being as it were bloated and blackish, which were
 “ symptoms of the part’s not being in its natural state.”
 These symptoms passed to the inner part of the head
 by a fatal metastasis ; nor did he find the vessels broke,
 but swelled and stuffed.

It is easily conceived, that the lochia, deposited
 at the several viscera, produce different diseases, ac-
 cording to the diversity of the functions which spring
 from these viscera. Hippocrates has described a mul-
 titude of these disorders ; “ But if the lochia should
 “ ascend to a woman’s head (for that sometimes hap-
 “ pens), she generally dies immediately, if they re-
 “ main there, &c. But if the lochia do not come
 “ through the uterus ; but, being carried with vio-
 “ lence, are turned upwards, they lie concealed, nor
 “ do they come out as they should do ; a cough and
 “ asthma will seize her : her lungs being filled with
 “ blood, her back and side will feel great pain. But
 “ when she coughs, something dry is thrown out by
 “ the cough ; at other times something frothy is spit
 “ out. But in process of time, the spittle appears
 “ blackish and thick ; there is more warmth in the
 “ breasts than in any other part of the body, the
 “ blood itself warming them, &c. But if the lochia,
 “ carried with violence upwards, do not pass thro’
 “ the mouth, nor are turned towards the lungs, they
 “ will turn to the face, which will be very red, and
 “ the head heavy, nor will it be able to move with-
 “ out.

“ out pain; the eyes will also be very red, and thin
 “ blood will flow from them. Sometimes there runs
 “ some blood out at the nostrils; if this should be
 “ poured out, the disease will become more lastingⁱ.”
 In another place ^k he gives us to understand, that
 some parts of the body may be rendered incapable of
 motion, and that a lameness may be occasioned, by too
 tardy a flowing of the lochia.

All this may happen to women in the most perfect
 health, from whom the purest blood flows after deli-
 very, as if it flowed from a victim; for it may be cor-
 rupted in the cavity or recesses of the uterus by decay
 alone, and putrid filth sprung from thence may be
 sucked in, and afterwards by its several changes may
 produce various and most dangerous diseases. There
 will be still greater danger to be feared, if before de-
 livery the humours have degenerated much from the
 conditions required by health. Hippocrates has given
 us to understand, that in places whose inhabitants
 drink standing waters, women are troubled with swell-
 ings and with white phlegm, and can scarce conceive:
 “ Nor does a due purging after delivery, happen in
 “ such women^l.” In another place he said, *In wo-*
men with child, salt humours denote, that, after delivery,
there will be pain occasioned by sharp, biting particles.
Such purgations grow hard: in these, sobbing is a bad
symptom; so is the falling of the uterus, which happening
once, is fatal^m. And a little after, *In women with*
child, saltish runnings by the fauces are bad symp-
tomsⁿ. For it was said before, that after the vessels
 of the uterus, distended with blood, were evacua-
 ted, the lochia came out on the third day, ha-
 ving the properties of pus, and thus the hollow sur-
 face of the uterus is purged. But it was demonstra-
 ted

ⁱ De Mulier. Morb. lib. i. cap. 45. Charter. Tom. VII. p. 755.

^k Ibid. cap. 41. p. 753.

cap. 3. text. 7. Charter. Tom. 6. p. 105.

^m In gestantibus uterum saluginosâ, significant post partum mole-
 stias ex albis mordacibus. Tales purgationes indurant, singultus in his,
 malum, et uterorum procidentia, quæ et una interficit. Coac. Prenot.
 n^o 526. Charter. Tom. VIII. p. 883.

ⁿ Uterum gerentibus saluginosâ juxta fauces fluxiones, malum. I-
 bid. n^o 537. ibid. p. 884.

ted at §. 387. that mild humours are required, that a kindly suppuration may come on. But in a woman in such a state, the sharp humours flow to the uterus; whence its sensible surface will be too much irritated.

For the same reason, the diseases that precede delivery are to be taken into consideration. Hippocrates has said, That "those who before delivery have been affected, as it were, with the disorder called cholera, are delivered with ease; but if they should be seized with a fever, they are in a bad way, as well in other cases, as when any thing gives them pain about the fauces; or if the fever is attended with any bad symptom^o." He foretold it of women who are troubled with phlegm or with the spleen^p, That lochia of a bad colour would come out, and that there was some danger of their being suppressed. In another place he has given us to understand, That, "if a woman with child should be troubled with any disorder of a quite different nature, she dies during the evacuations after delivery^q." The observations of more modern physicians confirm this. Thus Hoffman: "When women with child, especially in the latter months of their pregnancy, complain much of weakness, accompanied with internal heat, he has often seen and foretold bad consequences in the delivery^r."

It was said before, that the uterus is sometimes inflamed by a retention of the lochia, and sometimes by laborious delivery; and that, being inflamed by the rude handling of the midwife, it occasioned a suppression of the evacuations after delivery. The symptoms of an inflammation of the uterus have been already treated of. But such an inflammation will be cured either by a gentle relaxation, or it will go thro' the other stages of an inflammation, as suppuration, gangrene, mortification, and a schirrhous tumour, which may give occasion to a cancer of the uterus. But sometimes a violent inflammation of the uterus, so

^o Ibid. no 533. p. 883.

cap. 28, 29. Charter. Tom. VII. p. 746, 747.

Puer. cap. 5. Charter. Tom. V. p. 315.

System. Tom. IV. parte ii. sect. 1. cap. 1. p. 25.

^p De Mulier. Morb. lib. i.

^q De Natur.

^r Medic. Ration. et

so oppresses the brain, and disturbs its functions, that death would follow before the several stages of inflammation could succeed each other. It was said already at §. 432, that a gangrene of the viscera is mortal; but that one in the genitals is very hard to be cured. At the same time, some cases of gangrenes in the genitals cured, were related; chiefly from the observations of Ruyfch: That is, whilst the vagina bruised by a difficult delivery, and the intestinum rectum wasted away with a gangrene, and being afterwards corrupted, were by suppuration separated from the whole parts; the woman who had been delivered, still surviving. For when a head of a considerable bulk sticks a long time in the passage out of the pelvis, all the neighbouring soft parts are so compressed to the hard bones of the pelvis, that all circulation of the humours, through the compressed parts, is totally obstructed; whence follows a gangrene. It admits of no doubt that such gangrenes have been sometimes cured. But if the gangrene be caused by a great preceding inflammation of the uterus, I do not know that it has appeared by any observations, that such a gangrene was ever cured; and I believe nobody will doubt, that, if such a cure is made, it is but rarely. But as a gangrene can never be cured but by causing suppuration, by means of which the dead and corrupt flesh is separated from that which is sound, it will be worth while to say something of ulcers in the uterus. The schirrhous tumour, and the cancer, have been already spoken of; nor does this seem the proper place to treat of these consequences of the inflammation: For they are not properly in the class of diseases of lying-in women; as these disorders are incident to those women who are just out of childbed, and are scarce ever observed before.

It is at the same time obvious, that we are not here to understand that slight and gentle suppuration, by which the hollow surface of the uterus is cleansed, as was said before: but what we treat of here is suppuration produced in the very substance of the uterus, when there has been an inflammation in the case before.

fore. Hippocrates has given us his advice concerning these disorders: "But care is speedily to be taken, if
 "there should be ulcers in the uterus. They are then
 "indeed in a tender place; they quickly grow, and as
 "quickly putrefy".

It is known by the preceding Inflammation, and the symptoms of a beginning suppuration; which have been often treated of in the chapter upon the Abscess, and amongst the Inflammatory Disorders of the Viscera. If therefore pain should continue obstinately about the uterus, and without very bad symptoms, a suppuration of the uterus should be expected: *When there is a pain in the belly after delivery, these evacuate purulent matter*^t. There is at that time a slight fever in the case, which generally accompanies suppurations any way considerable, especially in the bowels. Wherefore Celsus has given us to understand, "that
 "if a woman should have a fever, which should take
 "its rise in the groin, and the cause not appear, there
 "is an ulcer in the uterus"^u." If such an imposthume should grow in the uterus, it were to be wished that it would break in such a manner that the pus might come through the parts; for so they are more speedily cured. But if the pus should endeavour to come out by another passage, the cure is greatly protracted, and sometimes is obtained with great difficulty. This will likewise hold if the pus gathered in the substance of the uterus is removed to others parts of the body.

Sometimes an imposthume of the uterus draws its collected pus towards the outward parts of the body. Wherefore Hippocrates has informed us: *If the uterus which lies upon the ischion, should be suppurated, there is a necessity of dressing it with lint*^x. For then the hands can have access, whilst the ulcer of the uterus is opened on the outside; wherefore there will be occasion for

^s De Mulier. Morb. lib. i. cap. 66. Charter. Tom. VII. p. 768.

^t Dolor ventris post partum, in his purulenta purgant. *Coac. Prænot.* n^o 520. Charter. Tom. VIII. p. 883.

^u Lib. ii. cap. 7. p. 60.

^x Si uterus, ischio incumbens, suppuratus fuerit, necesse est, illum linteis carptis curari. *Aphor.* 47. sect. v. Charter. Tom. IX. p. 223.

for lint and many other things of that nature; and for that reason Galen^y informs us, that such disorders were by Hippocrates called *εμμοτα*: this subject has been treated of upon another occasion. Some such cases I myself have seen; but the cure was always tedious; and sometimes the tumour remained, though the patient's health was in other respects pretty well restored.

We meet with such a case in the works of the celebrated Benevoli^z, of a young woman, in whom the evacuations were suppressed five days after a difficult delivery, there being at the same time a violent fever in the case, together with a stretching of the abdomen, a tumour, vomiting, scanty urine, and the other symptoms of an inflamed uterus. Recourse was had to the most efficacious remedies in order to dissipate this inflammation; but all the symptoms continued, even to the twenty-fifth day: then the fever began to abate; the worst symptoms discontinued, the abdomen remaining tense and tumid for six months and upwards, chiefly about the right side of the third of the small guts, where was felt a hardness confined to that place. After six months more, she was attacked by a severe cough; whence that hard swelling, which before lay more deep, began to proceed towards the outward parts. Three months more being elapsed, she implored the assistance of Benevoli; who having carefully examined all the symptoms, concluded that there was an abscess at the bottom, applied fomentations, and opened the place sixteen months after delivery: which being done, there came out good pus, but in a very small quantity; as much, for example, as might seem capable of being contained under the coverings, nor did any thing seem to come from the innermost parts. But in eight or ten days after the opening of the tumour, the patient was seized with cold, with a fever; and the next morning, upon changing the dressing, there was found a quantity of liquefied and stinking pus: such matter continued to run out, nor was its quantity increased if the adjacent parts were pressed

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^y Ibid.^z Dissertazioni ed et osservazioni, &c. n^o 36. p. 217.

with the hand. On every eighth or tenth day the fever returned, and a more copious evacuation of pus followed during the space of about three months. During all this time there was nothing farther done but keeping the lips of the wound remote from each other, that the pus might have a free exit. Nor did any thing purulent ever come from the vagina; and at the usual time the patient had her monthly evacuations, though she was greatly emaciated by the disease. In the twentieth month there was a gangrene on the wound; which being separated, the aperture was greatly increased, but afterwards it was diminished, the little crifice which gave a free passage to the pus continuing. Thus the fistula remained incurable, as it could not possibly be cut without danger, because a probe being put in could be forced down six fingers breadth in a tranverse and tolerably deep direction.

We meet with an extraordinary case of suppuration upon the suppression of the evacuations after delivery^a. After a laborious delivery of twins, a woman's evacuations were suppressed entirely by excessive terror, and the suppression was attended with a stretching and violent pain of the abdomen. Upon the application of the softest fomentations, and the injection of clysters of a similar nature, bleeding in the arm being reiterated, the vehemence of the pangs was in some measure mitigated; and yet they never ceased during forty days and upwards. The swelled belly was of greater bulk than before delivery. The pains are on a sudden increased, and an aperture is spontaneously made, as well on the side as towards the lower parts, about the distance of four finger breadth from the navel; by this aperture there ran out several pounds of pus, sufficient to fill a tub: the pus continued constantly to run out of the vast abscess till it was emptied. A very simple dressing being applied, the patient in a short time recovered. Hippocrates, treating of this disorder, recommends the use of milk; and afterwards says: "After having drunk the milk, she should be fattened as much as possible with food," and

^a La Motte traite complet de Chirurg. Tom. I. p. 268.

“ and her pregnancy will be promoted; for she will
“ perfectly recover. Women generally recover of
“ this disorder, and become barren ^b.” This woman
however, after having gone through so severe a disorder,
was several times afterwards delivered.

It sometimes happens, that pus gathered in an ulcer of the uterus, being sucked in, comes out at another place. Thus I saw, in a woman with child, who was troubled with that species of dropfy called *anasarca*, a pain considerably intense seize upon the right side of the last of the small guts: after delivery, pus of a most nauseous smell run out of the pudendum, which in quantity diminished by degrees; and afterwards, white and destitute of smell, flowed constantly till the seventh month after delivery: at the same time there was a weakness in the right leg and thigh; then the pus flowed from the right breast, and the patient recovered slowly.

In another lying-in woman, I found that a looseness, attended with a most shocking smell, succeeded to all the other symptoms of an abscess formed in the right side of the last of the small guts; at the same time, a certain quantity of similar matter began to flow from the uterus, which gave the patient some relief, and the appetite was restored which had begun to fail. She then began to spit out matter of the same nature, and that in great quantities; this patient likewise recovered slowly.

As the pus, already collected in the uterus, is sometimes evacuated at other places; in like manner, when it comes from other parts, it is sometimes evacuated by the uterus. Hippocrates ^c has made this distinction, and has told us the symptoms by which this may be known: “ But whether they come from the uteri
“ themselves, may be known in this manner. Those
“ ulcerations which proceed from the uteri them-
“ selves, void purulent and thick matter; those which
“ do not come from them, a thin and corrupt mat-
“ ter.” Whatever has been before said concerning

^b De Mulier. Morb. lib. i. cap. 62. Charter. Tom. VII. p. 764.

^c Ibid. cap. 65. p. 766.

the cure of internal ulcers, may likewise be applied upon this occasion. “ The ulcers of the uterus are
 “ to be cured like those which are in the rest of the
 “ body; care should be taken to keep off inflamma-
 “ tion, to cleanse them, to fill them, and to bring
 “ them to a scab. Water is to be given for drink,
 “ wine by no means, and meat sparingly.^d Hippo-
 crates^e recommended gentle remedies, and food of a
 similar nature, when an ulcer of the uterus, which
 we are here treating of, is in the case; namely, that
 sort whose matter was not brought from another place,
 but was engendered and gathered in the substance of
 the uterus itself. “ In such ulcers as purulent and
 “ thick matter flows from, it is by no means proper
 “ to move the whole body, but to rinse them, and in
 “ this manner perform the whole cure.” For though
 the cleansing of ulcers, when they are dirty, some-
 times requires stronger remedies, great caution should
 be used in a part so extremely sensible, and which
 has so much influence over the rest of the body. Har-
 vey^f treated an ulcer of the uterus, which, when he
 undertook it, was of a pretty long standing: but as
 the common remedies had but little effect, he thought
 proper to have recourse to more powerful ones, add-
 ing a little Roman vitriol to the usual injections, “ by
 “ whose acrimony the uterus being affected, sudden-
 “ ly contracted itself, and it grew so hard, that it
 “ seemed to the touch to be harder than a stone; at
 “ the same time there arose several hysterical symp-
 “ toms, which are generally thought by physicians to
 “ spring from a stoppage of the uterus, and noxious
 “ vapours arising from thence. This disorder conti-
 “ nued for a time, till the uterus being eased by mild
 “ and gentle remedies, relaxed its orifice, and threw
 “ out the sharp liquor (with which I had injected
 “ it) together with corrupt and putrefied matter.”
 This useful observation teaches us what great evils
 might arise if the uterus should be irritated, whether
 this

^d Ibid. cap. 66. p. 768. ^e Ibid. cap. 65. p. 767.

^f Ex-

ercitat. de generat. animal. in capit. *De partu*, p. 379.

this were occasioned by a sharp remedy, or by any other cause whatever.

§. 1330. **A**LL these disorders cease spontaneously, when the cause (§. 1329.) is removed.

As all these disorders owe their rise to the suppression of the evacuations after delivery, the evacuations returning, all these symptoms will either diminish or entirely cease. It appeared by the preceding paragraph, that suppressed evacuations produce a variety of different disorders, according as they are carried to one or other of the viscera; and Hippocrates^a has given us the same information: “ If she has not been
“ thoroughly purged after delivery, the belly and the
“ legs swell, coldness and pain seize upon the bottom of the belly, and it sometimes reaches even to
“ the bowels.” Something of a similar nature we meet with elsewhere^b. Besides^c, speaking of a lying-in woman, from whom, “ on the first three or four
“ days of her lying-in, the lochia were evacuated,
“ and then the evacuations suddenly discontinued;” he adds, “ But if the woman be prescribed a proper
“ regimen, she will recover, if speedy care be taken
“ of her.”

But if the frame of the viscera has been very much hurt by a metastasis of the lochia, although the lochia should return, perfect health will not follow, but there will remain a defect in some of the functions, and that sometimes during the remainder of the patient's life. Whence in another place^d, where he treats of the lochia rushing to the head, the stomach; and the lungs, he gives us to understand that the woman in labour generally dies directly; but if she should live, the lungs often are vitiated, and a cough and asthma follows: but if the lochia should be turned towards the head, “ she will lose her senses, and be seized

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^a De Natur. Muliebri, cap. 9. Charter. Tom. VII. p. 685. ^b De Morb. Mulier. lib. i. cap. 40. *ibid.* p. 752.

^c *Ibid.* cap. 39.

^d *Ibid.* cap. 45. p. 755.

“ with terrible deliriums.” He then adds, “ But if she be taken care of, she may recover: yet there is not much hope that she will live; and if she perhaps should live, deafness or a total blindness will follow.” Sydenham^c has confirmed this by his observations, in treating of the disorders which follow a suppression of the evacuations after delivery: “ For sometimes they are attacked with a frenzy upon this occasion, which, becoming more dreadful every day, first brings on convulsive motions, and then death: or if they should escape death, their frenzy is sometimes mitigated; but they frequently continue somewhat crazy to the end of their lives.” I have often been the sorrowful witness of such cases.

From thence it is evident, that perfect health then only follows, when the evacuations after delivery, which had been before suppressed, are restored; if this should happen quickly, and none of the viscera be remarkably injured by the transferring of the lochia.

§. 1331. **H**ENCE are required gentle antacids to correct the acid taint of the serum; mild diluents, composed of barley, oats, almonds, flesh-broths; gentle specific aperients from the milder cardiacs and uterines; topical aperient remedies, clysters, fomentations, cataplasms, plasters, liniments, cupping-glasses, pessaries, and suppositories.

We come now to speak of the method of treating child-bed women, both to prevent a suppression of the lochia, and to restore them when they are either deficient or suppressed.

Here we should chiefly attend to what has been said at §. 1329. namely, That the evacuations were naturally very much diminished; and that, about the third or fourth day, they are scarcely bloody; but that then some stuff of a purulent nature comes out, by which the hollow surface of the uterus is cleansed: it would there-

^c Dissertat. Epistol. p. 531, 532.

therefore be badly consulting the welfare of the women in labour, to give them then such remedies as might force out the lochia. But whilst the breasts begin to swell, then the force and quantity of the humours is turned from the uterus, and tends towards the breasts: whence the evacuations in women who give suck to their children, are, *ceteris paribus*, more scanty than in others; but in those whose milk should be resorbed, whilst this is done, the evacuations are always increased.

A complete composure both of body and mind are absolutely required. For it can scarcely be believed, how easily moved the whole nervous system is in lying-in women; especially if they be tender, delicately brought up, and subject to hysteric disorders. *Peu*^a has proved by many examples, the said effects of anger or terror. I have sometimes seen examples of the like nature. The troublesome visits of their friends, who come to congratulate them, are often very hurtful: this pernicious custom has obtained chiefly amongst the nobility; and it was with difficulty I could prevail to have those who came every day to congratulate the woman in childbed (either through friendship or in compliance with the fashion) shewn into a room at some distance from her. If, amongst those matrons, there should be but one who should renew the memory of a concealed resentment, the worst consequences are to be feared. Perfumes, which some use to such excess, that even after they have changed their clothes their skin remains full of them, have often such effect upon lying-in women, that violent headaches, deliriums, and suppression of the evacuations after delivery, are occasioned by them^b. I have seen many such cases: thus it is customary to tie to the beds of lying-in women, little knots composed of fetid uterine medicines, as *assa fœtida*, *castor*, which are sometimes troublesome by their bad smell. All these inconveniences may be obviated, if the lying-in women are kept perfectly quiet, and all things avoided which

^a *La pratiq. des accouch. liv. i. chap. 8. p. 75, &c.*
P. 239.

^b *Ibid.*

which can any way discompose their bodies or minds. This necessary caution has been already treated of at §. 1329. Sydenham was for having the repose of lying-in women protracted for several days. For he was of opinion, that scarce the tenth part of those who die in childbed, perish thro' want of strength or the fatigue they have undergone, but only because they have quit-
 " their beds before it was proper. " Wherefore I ad-
 " vise all who hear me, to keep their beds to the tenth
 " day, at least if they be of a weakly frame, especial-
 " ly if they have been heretofore attacked by *vapours*,
 " as they are commonly called °." It is generally ob-
 served in robust women accustomed to bodily labour,
 that they have no occasion to keep their beds so long.
 Levret^d commanded, that particular caution should be
 observed with regard to such as have feeble bodies,
 and have led a sedentary life, that they should not stir
 from their beds before the twelfth day, for fear of a
prolapsus uteri.

It was said at §. 1329. that the abdomen should be gently bound with a linen swathe. But nothing is more hurtful than to bind the belly strongly with swathes. Peu^c was surpris'd, at coming to a young woman whom he had happily brought out of danger, to see her, on the second day after delivery, lie anxious, with sparkling eyes, and incapable of sleep, on account of a violent head-ach; she had also a sickness in the stomach, a faintness, stinking belches, a pain in her left side, a suppression of the evacuations after delivery: she was immediately bled twice in the arm, and thrice in the foot, and yet all the symptoms were increased: the cause of all this suffering being farther in-
 quired into, the abdomen was found so strongly bound with a roller, that it seemed surprising that she was able to breath. The roller was loosened, the evacuations presently returned, and all those bad symptoms vanished. He in the same place relates many similar cases.

The chief care to be had is, lest the urine should be too long retained in women who have been just de-
 liver-

^c Dissertat. Epistol. p. 532.

^d L'art des accouch. p. 139.
 La pratiq. des accouch. liv. ii. chap. 16. p. 526.

livered. For whilst, the uterus being now empty, the abdomen is become flaccid, the bladder is easily distended without any trouble, and they often do not perceive any inclination to make water, before the bladder has been distended beyond measure, and has lost the power of contracting itself; whence follows a troublesome suppression of the urine, which must be removed by thrusting a fistulous instrument up the bladder. In order to avoid this, I have always earnestly advised, that the women who lie in, after having had a few hours repose, should try to void their urine, though they feel no inclination to make water. During delivery they are sometimes thirsty, and they drink a great deal; after delivery, broths are usually given: whence a quantity of urine is gathered in the bladder.

Some have been so careful of the lying-in woman's repose, that they have considered it as a shocking thing to put clean sheets to the bed before the tenth day after delivery ^f. Certain it is, that the cold air being let in upon the first days of lying-in, must do great hurt, especially if it should touch the lower parts of the body. But it should be taken into consideration, that the sheets are defiled by the lochia, which are corrupted by the heat of the body, and produce a very nauseous smell. I remember that I have sometimes visited such lying-in women, who had then been for some days in this dirty condition. Whilst they stretched their hands to me from under the bed-clothes, that I might feel their pulses, my nostrils were struck with such a stink, that I was near fainting away, though I do not think myself so nice as to be easily affected by a bad smell. It is obvious that the worst consequences are to be feared, if lying-in women should be obliged to remain for several days together in such a putrefied atmosphere. Authentic observations have confirmed, that this filth and putrefaction have been hurtful to women who have been brought to bed in hospitals; for a great number of them perished; and the governors of the hospitals began

gan to suspect that the ignorance or negligence of the midwives was the cause. The bodies of many of the deceased were opened, and their innermost parts were found filled with abscesses. A skilful physician, examining all things with attention, found the cause to be, that the ward under that of the women in labour was filled with wounded persons. His opinion was confirmed, by finding, that as the number of wounded persons increased, the mortality amongst the women in labour increased likewise; and that as the former was diminished, so likewise was the latter. Moist air, whether warm or cold, was hurtful; but dry air was beneficial: for it is well known, that moist air is favourable to putrefaction, especially if it be warm at the same time. But when the lying-in women were placed in the ward underneath, this mortality was no longer observed; for the air, filled with putrid exhalations, is lighter, and therefore rises higherⁿ.

From hence it seems proper, that the sheets should be more quickly changed; but with great caution, that cold air do not approach the body, or moist and cold sheets be laid on the bed. This may be easily done if the lying-in woman should wear a short shift, which only reaches down to the navel; whilst the rest of the body is covered with a sheet, which is wrapped round for readiness, and is quickly and easily changed. But all this linen is to be applied dry, warm, and imbued with the vapour of frankincense, mastich, &c. For women of condition, two beds are prepared exactly contiguous to each other, which, if there should be occasion, may be removed with ease, and without any noise, whilst the feet of the bed are furnished with little wheels, by which it may be rolled in any direction. Whilst these beds are contiguous, the lying-in woman is easily removed from one to the other, and thus the clothes may be easily cleaned. It is scarce credible what ease lying-in women receive from hence, in not being obliged to lie a long time in a dirty condition.

If

If then they are left in a state of repose; if prattling attendants are kept from them; if the servants about them are all silent; if they lie in a darkish place, where there is but a glimmering light, that all things may be avoided by which the senses are violently affected; the recovery is happily effected.

Their food should be soft, liquid, extracted from oats, barley, rice, and other things of a like nature; flesh-broths not too strong, given several times in the day, but in small quantities each time. They should abstain from meat, till the milk-fever is over; then white meats are allowed them by degrees, first in small quantities, which are afterwards prudently increased in proportion as the appetite and digestion mend. In the mean time, it must always be considered, that women who lie-in are to be nourished: choice is made of light meats easy of digestion; but such a quantity of these should be given, as is sufficient to support the body. Sometimes ill-natured nurses, and sometimes rigid physicians, make lying-in women fast on the first days after delivery; this is hurtful. Upon this subject the reader may consult what has been said at §. 600, 601.

A mild, thin, and copious drink, is recommended, that all the humours of the body may be thin, and may circulate freely. Wine is abstained from on the first days, except weakness makes a certain quantity of it necessary: water is agreeable to those who are used to it; and it is of service, as well as gentle emulsions and infusions prepared of emollient herbs. I never knew new-beer, clear and mild, hurtful to women in labour who have been used to that liquor. Whatever drink is allowed, should always be given a little warm, never quite cold; for that generally occasions gripings, horrors, and a suppression of the evacuations after delivery.

But as the milky serum, as has been said before, is carried to the uterus, and afterwards to the breasts, and most of the liquors and aliments allowed lying-in women, especially those who are just delivered, grow sour of their own accord; hence gentle antacids, and things

things of an absorbing nature, should be given, from crab-shells, coral, burnt hartshorn, &c. With regard to these, see what has been said at §. 66, where the method of correcting acid acrimony was treated of.

It was said above, that, at the latter end of the time of pregnancy, the great intestines are sometimes so pressed, that hard excrements are gathered in their cavity; and their bulk is sometimes so considerable, that being after delivery carried to the intestinum rectum, or last gut, they are with great difficulty forced out. When delivery approaches, prudent midwives generally give a clyster, lest the excrements remaining in the rectum should obstruct it. Many women void their excrements during the efforts of delivery. If this should happen, it may be deferred for two or three days without danger. But if the belly should remain bound, a clyster may be safely given, but it should be a mild one. Broth, or an emollient decoction, with an ounce or two of oil of almonds, and the same quantity of syrup of marsh-mallows, will suffice for this purpose: for the design is only to lubricate the passages, and to soften the excrements, that they may come out with the greater ease; nor did I ever know this do any hurt. Some however are of opinion, that costiveness is serviceable to women in childbed, and they do not venture during eight days or more to give even a gentle clyster, waiting till the hard excrements may be forced out of themselves; often not without great difficulty, and a violent effort. For they are apprehensive of a looseness, which they look upon as always dangerous, and, generally speaking, mortal to women in childbed. Hippocrates has told us the following particulars: “ But if from delivery the uterus should be disordered, there is a slight fever in the case, the belly is inflamed in its inside, and sometimes swells as far as the hip; a pain likewise seizes the lower part of the belly, and the soft parts of the sides; the stools are bilious, and of a very bad smell; and if the looseness be not stopped, the patient quickly dies ^h.” He then recommends various

^h De Mulier. Morb. lib. i. cap. 55. Charter. Tom. VII. p. 759.

rious remedies for stopping the looseness. But before, at §. 586, no 2. where the causes of fevers were treated of, it was observed from Hippocrates, that there is danger of a fever or a flux, if the body should continue open. And at §. 772, in the history of the Frenzy, it was likewise said from Hippocrates and Galen, that costiveness is not properly a symptom of the brain's being disordered, but that disorders of the head are always increased and made worse by costiveness. It is well known, that, in childbed, pains in the head are often troublesome, and that they are sometimes succeeded by deliriums; whence it is plain, that a continued costiveness is bad for women in childbed. Hippocrates himself, in a dangerous suppression of the evacuations after delivery, ordered, *Alvum emolliri, melius autem est clyisma injicere*; "That the belly should be softened, but it is better to give a clyster¹." In like manner Mauriceau^k, in the most dangerous disorder of lying-in women, namely, an inflammation of the uterus, advises to keep the body open by soft clysters, which have nothing of a sharp stimulating quality. Whence it is evident, that it is both beneficial and safe, that the belly should be cleansed with a clyster during the time of lying-in.

We need not be under any great apprehensions from frequent going to stool, nor even from an inconsiderable diarrhoea, in women who lie in, if it be not attended with other and worse symptoms. The celebrated de Haen " had frequent opportunities of observing in the Dutch women, a diarrhoea instead of the evacuations after delivery: this is in general thought dangerous; yet it preserves the lives of many, if their strength be carefully preserved¹." I have observed this both in the Dutch women and those of Vienna, even when their lochia flowed from them slowly. It was before remarked, that many of the viscera are compressed by the pregnant uterus swelling, and that thus their functions may be obstructed; nor is the jaundice uncommon in pregnant women. It is

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not

ⁱ Ibid. cap. 42. p. 745.
liv. iii. chap. 2. p. 421.

^k Traite de malad. de femm. gross.
¹ De hæmorrhoid. theses. cap. 5. p. 76.

not therefore to be wondered at, if the viscera, being now freed from the pressure of the uterus, should force out all that by stool which had been retained and accumulated during the time of pregnancy. It seems, that, for this reason, celebrated practitioners, as soon as the disorders that arise from the fatigue of delivery subsided, began then to think of cleansing the abdominal viscera. Hoffman prepared pills composed of extracted bitters, resinous gums, and aloes properly corrected, of which he gave fifteen grains morning and evening on the second day after delivery; and according as the exigency required, persisted several days in the use of them: “For by strengthening as well the
 “tone of the intestines, as of the uterus itself deprived of its strength by too great stretching, and at
 “the same time by a gentle stimulation, it clears the
 “lower belly and the intestines of excrements, and
 “even clears the uterus itself of corrupted blood^m.”

For the same reason Levretⁿ recommended the continued use of the Arcanum Duplicatum, but given in moderate doses; he did not begin to give it till after the milk-fever was over. For he rather chose, and that very judiciously, to administer nothing immediately or in a very short time after delivery, unless there was a pressing necessity for so doing. If any thing should stick fast to the viscera, it will be insensibly dissolved by soft diluents; and afterwards, of its own accord, or with a gentle stimulation, will quit the body, when delivery is happily effected.

But when, the evacuations after delivery being suppressed, the womb inflamed, and all things tending to destruction, there come from the uterus thin excrements of a nauseous smell, with a great diminution of the strength, death is at hand: hence it is, that, at the least appearance of a diarrhœa, the women in labour and the by-standers are so uneasy, and require that such a flux should be immediately stopped; and if the physician should not indulge them, his reputation is lost for ever in case the woman should die.

Hip-

^m Medic. Ration. System. Tom. IV. sect. 2. cap. 10. p. 498.
ⁿ L'art des accouch. p. 138.

Hippocrates has given us a general practical axiom which I cited at §. 11. “ If such things as should be purged away, are purged away, the patient is relieved, and easily bears the discharge; if the contrary, then the contrary effect follows.” Nor does this rule deceive us. For this reason, Levret^o has judiciously divided the diarrhœa of women in labour into the *critical* and the *symptomatical*. The *critical* generally begins after the third or fourth day of childbed: the patient voids yellow or whitish excrements, or excrements of these two colours blended together; which gives her great relief; and is not attended either with a suppression of the evacuations after delivery, or of the urine, but only with a diminution of them: sleep and appetite continue, the pulse is regular, and the abdomen soft. It is observed, on the contrary, in the *symptomatic* diarrhœa, that it begins more suddenly; that slimy and blackish excrements are immediately voided, which are at last changed into grey and ferous matter, sometimes into purulent and bloody matter; the evacuations after delivery are suppressed, the abdomen swells, the strength is diminished, the appetite is destroyed, sleep is banished; the quantity of the urine is diminished, and it leaves a sediment of the colour of brick-dust; there is a thirst; and the patient feels an internal heat, whilst the external surface of the body is cold.

The rules of art forbid us to stop such a critical diarrhœa; to keep back the symptomatical, seems not to be very safe, as putrefaction would by that means be retained in the body. The medical indication here requires, that we should correct the putrefaction which is begun with efficacious antiseptics, and restore the sinking strength. But if any putrefaction, being mixed with the humours, should run through the vessels, and a weakening flux should come on, this will come out of the body more safely by urine and sweats. Hippocrates, after he had advised to relax the belly above all things with a clyster, in a suppression of the evacuations after delivery, as has been said, adds,

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That

That “ if ſhe ſhould eaſily vomit, her vomiting ſhould
 “ be promoted; but it is better to promote urine and
 “ perſpiration^P.” Gentle diluents, which are uſual-
 ly given in great quantities to women in childbed,
 ſupply both the urine and ſweat with a vehicle: how-
 ever, ſuch ſweats are not deſirable, as are forced out
 by the intense heat of a chamber, the heat of clothes
 laid on, or warm ſweating draughts; for thoſe would
 be hurtful. They are then only of ſervice when they
 are promoted by the kindly heat of the bed and dilu-
 ted humours. For thus the wearineſs of the whole
 body, occaſioned by the fatigue of delivery, is remo-
 ved; and the milk-fever is uſually carried off in the
 ſame manner. See what has been ſaid at §. 73. *et ſeq.*
 concerning the Febrile Sweat.

Hence the reaſon is obvious, why the chief authors
 who have written upon the art of midwifery and the
 diſorders of childbed, ſpeak ſo highly of thoſe gentle
 ſweats at that time; having perceived ſuch great ad-
 vantages riſe from them, and, on the contrary, ſo
 many diſorders if they ſhould be indiſcreetly ſuppreſ-
 ſed. For there generally follow fluxes, attended with
 ſevere gripings, grievous pains in the limbs, a ſup-
 preſſion of the evacuations after delivery, violent fe-
 vers; all which diſorders are happily ſurmounted if
 the ſweats return, being excited by the warmth of the
 bed, and diluting broths. Nay Sydenham, who, as
 it is well known, had no ſuch great opinion of the
 warmth of the bed and ſweating; yet, in ſpeaking of
 women in labour, ſays, with his uſual candour: “ For
 “ beſides, that that repoſe which they enjoy in bed
 “ preſerves them from the diſorders ſo often enume-
 “ rated, the uninterrupted warmth of the bed re-
 “ ſtores their ſpirits in like manner, exhausted and
 “ broken, as well by the pains of child-bearing, as
 “ by the evacuations uſual in this caſe; it likewise
 “ contributes to ſupport nature, and digeſts and car-
 “ ries off all the crudities which the woman had con-
 “ tracted during the time of her pregnancy.”

If it ſhould appear from the ſymptoms before enu-
 me-

merated, that the uterus is inflamed, all the circumstances which have been mentioned in the history of an Inflammation, and of inflammatory disorders, will take place. In the following paragraph, the method of bleeding lying-in women shall be treated of.

The most gentle specific aperients from the milder cardiacs and uterines,] Are recommended for restoring the suppressed evacuations after delivery. Such remedies as promote the evacuations of the lochia are generally called *aristolochia*, and these have been enumerated by Boerhaave⁹. But they are divided into two classes, the former called *deriving*, the latter *opening*; we shall now treat of the latter, and at the same time of such things as are applied both internally and externally. If we run over a catalogue of these remedies, we shall find that they are all hot and stimulating; but that some of them are more, some less powerful. Thus, for example, mugwort, motherwort, and germander, are milder than savine, savory, &c. The same holds good of distilled oils: thus the oils of cinnamon and of cloves, are very strong; the oils of mace and baulm, though very fragrant, are much milder. These cordials are beneficial in case of weakness and langour. The same thing is true of the remedies against diseases of the uterus; which having increased the motion of the humours, press the vessels of the uterus, and open such as are shut. Hence these remedies are called both *Emmenagoga* and *Aristolochica*; concerning which, see what has been said at §. 1291.

But as an inflammation of the uterus is always to be apprehended in lying-in women, if the evacuations after delivery should be unseasonably suppressed, prudence advises, that only the most gentle specific remedies, whether uterine or cordial, should be used: but this is done by chusing out the mildest of these; or if the stronger are to be administered, a small quantity of these should be given, infused in a large quantity of water; whilst at the same time, the vessels of the uterus are disposed in such a manner by fomenta-

tions, vapours, &c. that they may with the more ease yield to the force of the humours, which is somewhat increased: the greatest caution of all is required, with regard to those that are easily moved, or are subject to fits of the mother. Hence Sydenham^r has very prudently advised physicians not to continue long in the use of those remedies that are called uterine: “ But
 “ having for a time administered the remedies which
 “ are in this case generally given with success, if they
 “ should not succeed to our wish, we should abstain
 “ from them; as neither the stronger can here have
 “ place, nor should we persist in the use of the mild-
 “ er remedies, on account of the worn and almost ex-
 “ hausted strength of the lying-in women.” He once, and but once only, prescribed laudanum, either by itself or mixed with uterine remedies, in order to compose the disordered spirits: “ For we are carefully to
 “ observe, that if, by shooting this arrow, we do not
 “ hit the mark, and the lochia should not come out,
 “ we should not have recourse to opium a second
 “ time, as in other cases we should.” He has passed the same judgment upon the use of clysters, nor would he have them repeated if the lochia do not come out after one injection. But in that case he was of opinion, that “ the whole cure should be com-
 “ mitted to time, the prince and coriphæus of physi-
 “ cians:” chiefly because “ the business of cure be-
 “ comes every day less and less doubtful; and if the
 “ patient passes the twentieth day, she is almost out
 “ of danger.”

I have constantly followed this method, nor did I ever repent it. In a lying-in woman, whose evacuations were very scanty, there remained a troublesome pain in the outermost part of the abdomen, which did not yield to gentle remedies administered in order to promote the evacuations. I applied the softest fomentations both by day and night. I applied plaisters of the same nature, after she had risen from childbed: six weeks after delivery, a quantity of blood flowed from the uterus, with some relief of her pain; and she afterwards

* In Dissertat. Epistol. p. 533, et seq.

wards lived healthy, and fruitful.

The other class of Aristolochic remedies^s, contains those things that direct to the uterus with this effect, that the humours should be conducted in a greater quantity, and with greater violence, towards the lower branches of the aorta. But this is effected either by diminishing the resistance of the inferior vessels by baths, fomentations, cupping-glasses, aromatic plasters, or by increasing the circulation of the humours in the lower parts by frictions; which end is likewise promoted by bleeding in the foot. But it should be considered, that except the closed vessels of the uterus can be opened by this increase of motion, all the bad symptoms are increased; whence likewise it is evident, that prudence is required in the use of them. Upon this subject, see what has been said in the chapter upon Obstructions, at §. 134, 135.

For this reason Manningham has^t advised, “That if, upon the suppression of the evacuations after delivery, the uterus should be inflamed, the patient should rather be bled in the arm than the foot.” For, the motion of the blood through the lower vessels being accelerated, the inflamed uterus will suffer the greater violence. Hoffman^u indeed has laid it down as a rule, that if the evacuations go on, the best way would be to bleed in the lower parts after bathing the feet. He acknowledges, however, that he had known some examples, when, during the evacuations, a purple fever, attended with the worst symptoms, had seized the patient, and that bleeding in the arm had been of great service. He at the same time relates a case^v of a lying-in woman, whose evacuations after delivery had been suppressed, by her being exposed to the cold air, and her being seized with a sudden fright occasioned by a fire. A pleurisy soon followed; and upon her being bled in the leg, the evacuations did not return, nor even after the second bleeding in the arm; but, “a sweat running copiously from her whole
“ body.

^s Instit. Boerh. sect. 1226. n^o 1. p. 537.

^t Art. obstetric. compend. p. 87.

^u Medic. Systemat. Ration. Tom. IV. sect. 2.

ap. 10. p. 517.

^v Ibid. p. 516.

“ body during four and twenty hours, and a softening clyster being given her, the evacuations of the uterus returned, and the patient recovered.” At the same time, it is evident from hence, that the reiterated bleedings prevented her from being suffocated by a pleurisy, but that the doubtful disorder was overcome by a critical sweat.

But though, by bleeding in the foot, the inferior arteries be diminished, and so in them the celerity be increased; yet for the same reason the force and the quantity are kept from the uterus, at least in part. For whilst the motion through the external iliac artery is accelerated, the force is diminished through the internal iliac of the same side, which gives the chief branches to the uterus. But the chief hope of cure seems to rise from the relaxation of the close-bound vessels of the uterus: for, in the case mentioned a while ago, the vessels of the skin and of the uterus were bound by the coldness of the air and by terror; and whilst a copious sweat flowed through the relaxed and open vessels of the skin, in a short time after, the vessels of the uterus being opened restored the necessary evacuations.—From hence it appears why

Topical aperient remedies] Are recommended, but especially all things of a soft nature, which have been treated of at §. 1291. for we should beware of things that irritate.—For this reason,

Pessaries and suppositories] Are scarce ever made use of: the former are put into the uterus, the latter into the anus. But as suppositories are put into the anus, that by their bulk or stimulating quality, or by both together, they may promote stool; gentle clysters are thought better for women who lie in, as they not only promote stool, but at the same time soften the hard excrements, lubricate the intestines, and cherish the neighbouring uterus whilst they remain in the rectum intestinum or strait gut.

Though pessaries and suppositories may be prepared in different ways, they are, generally speaking, prepared of honey. Thus Hippocrates describes them: “ Make the oblong medicines which are thrust up the
“ uterus

“ uterus thus, if you would have them efficacious. In-
 “ to half-boiled honey put such prescribed medicines
 “ as may be able to draw; and when you have put
 “ them in, form suppositories like those which are
 “ put up the fundament, and make them long and
 “ small. Then apply the suppository to the woman
 “ whilst she lies supine, reclined upon a bed raised
 “ high towards the feet; and warm it, being fastened
 “ to a little rag, or something of the kind, till it melts:
 “ but if you have a mind to apply a weaker supposi-
 “ tory, bind it to a pledget w.” The use of supposito-
 ries seems to have been very frequent with the ancient
 physicians; as in the treatise de *De Natura Muliebri*,
 and the treatise *De Mulierum Morbis*, many sorts of
 suppositories are described, of which some contain re-
 medies sufficiently strong. They are by surgeons
 applied with a good effect, in order to cure the dis-
 eases of the vagina; but it appears to be very doubt-
 ful whether recourse can be had to them with safety
 in a suppression of the evacuations after delivery. For
 the mouth of the uterus and the vagina itself had suf-
 fered a great deal during the time of delivery: hence
 they can easily be irritated, which seems by all means
 to be avoided. I will own ingenuously, that I never
 made use of medicines of this kind in order to promote
 the evacuations after delivery.

§. 1332. **B**LEEDING ought not easily, nor with-
 out the most urgent necessity, to be
 allowed.

What the lochia are, what end they answer, how
 their colour changes, how they are diminished in
 quantity, has been said under the preceding aphorisms.
 If all these things are properly considered, it will ap-
 pear evident, that bleeding is seldom required in wo-
 men in labour; and that it often hurts them, by weak-
 ening them; and that therefore recourse should not be
 had to it, except where indispensibly necessary.

Many

Many seem to be of opinion, that the blood which is lost after delivery is of a vitiated nature; and, generally speaking, are glad if lying-in women rise from childbed weak, pale, and exhausted: wherefore, if they suspect that there has not flowed a sufficient quantity of blood, they by bleeding let out that superfluity which they think burdensome to the body. It is evident from what has been said, that the quantity of the lochia varies very much in different women, who notwithstanding go happily through their time: it is known that such lying-in women as give suck to their children, have more inconsiderable evacuations after delivery than others, and that they cease sooner. It is likewise certain, that, upon the third or fourth day of childbed, something purulent comes out, either not stained at all, or stained with but very little blood, and that even in the most healthy women: then there follows the milk-fever; which is usually carried off by a gentle sweat, the milk having flowed to the breasts. At this time they think the evacuations after delivery suppressed; and so they have often recourse to bleeding, whilst they look upon that as morbidic which is in the course of nature, as has been more fully treated of before. Sometimes slight pains are at this time felt about the uterus, which may be cured easily enough by soft fomentations: these pains are mistaken for an inflammation of the uterus, and are thought to require expeditious and reiterated bleeding. What symptoms prove an inflammation of the uterus to be at hand, has been shewn at §. 1329. and in this case nobody can doubt that bleeding is beneficial. Thus Aëtius gives us the following prudent advice: “ But when a violent inflammation attacks
 “ the patient, if neither her age, her habit of body,
 “ or the season of the year are against it; nor an in-
 “ flammation after miscarriage, or after a great eva-
 “ cuation of blood, comes on; the patient should be
 “ bled in the arm, and blood should be drawn from
 “ her in proportion to her strength; and it will be
 “ proper in the second to bleed, and in the third to
 “ rei-

“reiterate bleeding^a.”

Aëtius has not therefore advised bleeding, except with caution, and that only when there was a violent inflammation of the uterus in the case. It is not therefore adviseable to bleed rashly upon every trifling complaint of women that lie in: and care should be taken lest the natural diminution of the lochia should be looked upon as a morbid suppression.

The celebrated Hoffman^b, who was an eye-witness of the case, has left us an account of the sad effect of imprudent bleeding a woman of quality, and of a vigorous constitution, whilst in labour. A painful swelling, caused by the rough handling of the midwife, seized on the vagina and the internal neck of the uterus on the second day after delivery; the symptoms growing worse, and the evacuations not continuing properly, a fever came on. The king's physician being called, bled her in the arm, and in seven days time bled her six times either in the arm or the foot. At the last bleeding her eyes were so obscure, that she wanted a candle though it was bright day-light, and soon after was seized with a fatal syncope. On the next day, the corpse being opened, in the whole vascular system there scarce remained a few spoonfuls of blood. Whence Hoffman concludes, “That many physicians are guilty of an error in rejecting all bleeding in the inflammatory disorders of women: in the present case, a grievous excess was committed; but the wise steer a middle course.”

It does not seem surprising that death should be occasioned by so excessive a loss of blood; but Sydenham^c informs us, that even by one improper bleeding a lying-in woman may lose her life. An honourable and virtuous matron was immediately after delivery seized with hysterical fits, and the evacuations after delivery failed entirely. He tried his method, but without success: he therefore chose to leave the cure to time, visiting her every day, and he did not perceive any increase

^a Lib. xvi. cap. 85. p. 162.
Tom. IV. lib. ii. cap. 10. p. 520.

^b Medic. Ration. System.
^c Dissertat. Epistol. p. 535.

crease of the bad symptoms. Thus by delays he protracted the disease to the fourteenth day. Then the women who were with the husband, advised, that his wife should be without delay bled in the foot: “ Which being done, the hysteric fits gained ground “ to such a degree, that within a few hours convul- “ sive motions came on, and soon after death, the pe- “ riod of all evils.” Levret ^d has seen many women in labour perish, from whom much blood had been drawn; nay, there did not even one escape, whilst this was attempted, either to prevent or cure a sup- puration of the uterus, or a metastasis of the milk. This has been treated of at §. 1329.

It is therefore evident, that women in labour should not be too readily bled, except an urgent necessity re- quires such an evacuation. In the case ^e, of which I have already made mention, when, on account of a strong constriction of the abdomen, the evacuations after delivery being suppressed, an intolerable pain in the head followed, with other bad symptoms, a woman was bled thrice, without receiving any relief: but after the bandage was loosed, her evacuations returned, and all the bad symptoms vanished.

However, it is here to be observed, that we treat in this place only of those diseases of childbed women, which arise from delivery, and its consequences, as their cause. For a lying-in woman may be seized with another disease, that requires a peculiar method of cure. Sydenham has observed, that the fever which sometimes follows a suppression of the lochia, either becomes of the same kind with, or proceeds from, the then reigning epidemic, and then requires the same method of cure with those fevers; the condition of the patient being always taken into consideration. I be- fore remarked, at §. 890. that I would have recourse had to bleeding, when the women in labour are seized with a pleurisy, though the evacuations after delive- ry continue. For the evacuations are not always stop- ped whilst such an inflammatory disorder comes on during

^d L'art. des accouch. p. 167.
p. 526.

^e Peu la pratique des accouch.

^f Dissertat. Epistol. p. 632.

during childbed. Thus La Motte^g saw, after a very laborious delivery, an acute pleurisy, arising on the fourth day after the patient was brought to bed, not at all relieved by copious sweats, as was hoped. But such a severe disorder did not so much as diminish the evacuations after delivery; and as he had been sent for a little of the latest, he was obliged to bleed four times, in order to quell the fury of the disease: there followed, however, a purulent imposthume; which she got rid of, though quite exhausted and worn away. She was by slow degrees restored to her health by the use of milk, and she recovered entirely. When upon the eighth day after delivery a woman had been seized with a severe pain in the side, Tulpius, as the pain raged continually with reiterated attacks, was obliged to bleed her three times in the foot, and five times in the arm^h. She not only bore this excessive loss of blood, but she was likewise obliged to undergo a violent flux before the disease was entirely dispelled.

§. 1333. **N**OR are the symptoms to be removed by the same means, as if they were acute disorders of a particular kind. (1329.)

This cannot be sufficiently inculcated, as so many errors in practice happen from want of attention to this rule. The uterus has great influence over the other parts of the body. Thus, for example, sometimes there arise such violent pains in the head, as have been taken by ignorant practitioners for real inflammations of the meninges of the brain. Peuv gives us the case of a young woman, who was, the second day after delivery, seized with a most violent headache, occasioned by a very tight roller with which the abdomen was bound. She lay anxious, her eyes sparkled, the lochia were stopt, &c. Who would not have thought from these symptoms, that a frenzy was approaching? I have seen many similar cases, which convince me, that the various symptoms which attend

lying-in women, and which often are like those of acute diseases, do not require to be treated like an inflammation. Bleeding is often attended with no sort of advantage: When the bandage is loosed, all the bad symptoms cease. This should be chiefly attended to in women of a delicate constitution, and in such as are subject to hysterical complaints. I have known a lying-in woman of such a constitution have very severe pains in the belly, whilst a lump of clotted blood that should have come out was detained a while in the orifice of the womb. A little after, the pain in the belly having ceased, she complained that she felt in her head pains like those she which felt in her belly; a quarter of an hour after she voided a thin aqueous urine, and the clotted lump was forced out by this effort to make water: immediately the pains in the head cease, and a quiet sleep for some hours follows; upon waking, she joyfully tells her mother, who was very uneasy about her, that she was perfectly recovered. I have seen many similar cases, which have convinced me, that the several symptoms which attend lying-in, and which often resemble acute disorders, do not require to be treated like an inflammation.

§. 1334. **W**HEN the milk is carried into the breasts, it often stagnates, and coagulates; whence an inflammatory pain, a supuration, a schirrhus, and a cancer.

The milk, intended as food for the new-born child, is often in the breasts at the time of pregnancy; and sometimes a considerable quantity drops out, as has been observed before. Thus the receptacle of milk is already prepared in pregnant women, that the child may find nourishment after delivery: for though I have seen children suck immediately after delivery, yet, generally speaking, the breasts begin to grow flaccid after delivery, nor are they tightened till the second, the third, or the fourth day, and sometimes later. The women who lie in feel slight standings-on-

end

end of the hair, as it were creeping under the skin; they become uneasy; their sleep is disturbed; they are generally feverish; they grow warm. Then the breasts begin to be stretched tighter, they swell more and more, the arms move with some uneasiness; then the milk is said to be carried to the breasts: if this should be effected with moderate force, all those inconveniences shortly cease, chiefly if the child should suck its mother; and so the too great stretching of the breasts by the gathered milk be avoided. That first milk which is gathered in the breasts after delivery, is thin and serous; and very beneficial to children just born, as it yields a thin nourishment, cleanses the ventricle and intestines of filth, and at the same time gently relaxes the belly.

Sometimes the milk is suddenly hurried into the breasts, and in a few hours greatly distends them. We have often spoke of the connection which is observed between the uterus and the breasts. Anatomists have wrote, that the internal vein of the breast communicates with the epigastric vein, or vein of the fore-part of the lowermost belly, by an anastomosis, or mutual opening into each other; and in the body of a woman just before delivered, these vessels have been seen to equal a writing pen^a. Hippocrates seems to intimate, that sometimes the humours are forced up, and not only distend the breasts, but also the vessels of the encephalon, when he expresses himself thus: *In women in whose breasts blood is gathered, madness is signified thereby*^b. In some women the milk easily comes out of their breasts through the extremities of the lacteal ducts, and that of its own accord; so that I have sometimes seen linen cloths which had been applied to the breasts require to be often changed, as they were all over wet with the serous milk. In such, stagnation and coagulation rarely have place. Suction is generally required to bring the milk out; as the nipples, consisting of membranes that may be folded over

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one.

^a Hemsterh. *Mellis aureæ*, p. 138.

^b *Quibus mulieribus sanguis in mammis colligitur, maniam significat. Aphor. 40. sect. 5. Charter. Tom. IX. p. 219.*

one another, these, having sunk down, wrap up the little lacteal tubes, and obstruct the easy passage of the milk ^c. Whence the pressure of the atmosphere being diminished by suction, the little lacteal tubes being at the same time by the stretching of the nipple placed in a proper position, the milk flows out, and the stretching of the breasts is diminished. But it was requisite that the milk should not always run out; but that, being gathered in the breasts, it should there remain till the child had occasion for the breasts. Therefore the lacteal ducts, the collection of which forms the glandulous substance of the breast, at their beginning are narrow, in the middle of their extent wider, and then again become narrow near the nipple, and near its circular basis constitute a sort of canal of communication, from which arise the lacteal tubes that are distributed through the nipple, and near its orifice gape with little mouths ^d. Whence it manifestly appears, that the effect of this whole apparatus is, that the milk may be gathered, and may stay some time in the breasts. The *membrana adiposa* unites itself with this whole glandulous substance of the breasts, whose little pores sustain numerous blood-vessels and lymphatic vessels, as well as the lacteal ducts and bunches of glands. This whole apparatus is contained in a membrane, which seems to be a continuation of the cellular membrane: that part of it which constitutes the bottom or basis is thicker, and sticks to the pectoral muscle underneath; the remainder of it is thinner, and grows firmly to the skin ^e.

From whence it is evident, that the structure and situation of the breasts may cause them to be greatly distended; this was requisite in order to gather the milk; but as soon as the distending force is ever so little diminished, they are strongly contracted by their own elasticity, and they throw the milk through the tubes, which are open in the breasts, to the distance of some feet. Hence, whilst the children suck the full breasts, the nurses perceive some degree of motion in
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^c Winslow *exposit. anatom. traite de la poitrine*, n^o 19. p. 586.

^d *Ibid.* n^o 13. p. 585.

^e *Ibid.* n^o 11, 12.

the whole breast; and they are accustomed to say that the breasts have fallen; and then the milk spurts out with great violence; and in such a quantity, that the child cannot swallow it; wherefore it forsakes the breast; or careful nurses, as soon as they perceive that motion beginning in the breast, immediately take the nipple from the mouth of the child, and give it back again as soon as the first violence of the spurting milk has ceased. This generally happens whilst the breasts are firm and solid, scarce ever in such as hang down and are flaccid.

But the milk, if it should stagnate, let it be ever so good, throws up a white, thick, and fat cream^f; the milk stays below, being skinned, of a bluish colour, transparent and thin. If with the milk be mixed that which is called the *rennet* of milk, which is prepared of the juice of the stomach of animals that chew the cud, it turns into an equal, coagulated mass, capable of being cut, which soon changes into serum, and becomes curdy, and of the nature of cheese. If an acid is mixed with it, it immediately becomes clotted, and coagulates, the remainder of the milk continuing fluid^g. But pure milk, left to itself, grows sour, especially in warm air; and then it becomes in like manner clotted, as when the acid is poured upon the milk. But the milk grows more and more yellow from the alkaline fixed salt which is added to it, and this according as more alkaline salt is mixed with it; and at last that yellow colour is generally changed into a deep red; but at the same time the milk is coagulated, though not so strongly as when this is caused by the mixture of the acid^h. But, “when an animal that gives suck
“to its young is very feverish, the milk is corrupted
“in the dugs; and then it becomes yellow, though
“extremely white before; salt, of sweet; of thick,
“corrupt and thin; and having, in the mean time,
“left the sediment in the breasts, it becomes of a
“nauseous smell, though before of no smell; disgust-
“ful and filthy to the infant. Therefore in the coa-

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“gula-

f H. Boerh. chem. Tom. II. p. 219.

g Ibid. p. 391.

h Ibid.

“gulation of milk, it being attended with a hot fever, and of a yellowish colour, the physician should not think of the coagulating acid; but of the too great heat, and perhaps rather of the alkaline coagulation. Nay, perhaps, physicians a hundred times observe the milk thus coagulated by a fever for once that they see it done by an acid.”

From whatever cause therefore the milk stagnates in the breasts, its degeneracy and coagulation is to be feared: a thin serum then usually flows from the nipples, the breast remaining equally stretched, equally in pain, and equally tumid, whilst all the clotted part is retained. The cold air suddenly reaching the breasts, has been observed to be a frequent cause of this disorderⁱ; wherefore those who attend a woman in labour, apply warm towels to their breasts, in order to guard against the ill effects of cold.

Is there any probability that an ill structure of the chest, and the difficult return of the blood of the veins from the breasts, contributes to this? In those women who do not give suck to their children, all the milk with which the breasts are filled should again return into the blood by the veins: but if that return should prove difficult, the milk will stagnate in the breasts, and a coagulation of the milk is to be apprehended. Was it this Hippocrates had in view when he said, *A suppuration in the breasts generally happens to such women as during their virginity were troubled with a difficulty of breathing*^k?

If therefore the milk being carried to the breasts should stagnate, there will be a separation of the parts which the milk consists of. The fat cream will quit it, which will grow stale during a feverish heat; the curdy part, though it first turns sour, may putrefy in the progress of the disease, for it then partakes more of the animal nature. For if the coagulation of milk is pressed with great force under a linen cloth, so that all the serum be separated from it, it becomes fat cheese,

ⁱ Levret, Part des accouch. p. 155.

^k Quibus virginibus orthopnæa contingit, illis uterum gerentibus mammae suppurantur. Coac. Prenot. n^o 549. Charter, Tom. VIII. p. 834.

cheese, consisting of the cream of milk and *cheese* properly so called: this in time becomes very strong, not acid, but rather of an alkaline nature. But if, the cream being first taken off, cheese is made of the coagulated milk, it grows as hard as horn; and being brought near the fire, grows perfectly supple like horn; it is scorched, it is burnt, it stinks¹.

Whence the reason is plain, why, when the milk stagnates, coagulates, and degenerates in the breasts, an inflammation follows; and all the consequences of one are to be apprehended, if it cannot be dispelled.

§. 1335. **I**T is known by alternate hot and cold fits, a fever, and the symptoms of a beginning inflammation.

An inflammation of the breasts often accompanies a milk-fever; which begins with alternate hot and cold fits, as has been said. It sometimes begins later, whilst the stagnating blood, from what cause soever it happens, begins to degenerate in the breasts. The first generally happens to those women, whose milk, being gathered in their breasts, should be driven back; the latter oftener happens in those that give suck. But as there is the greater hope of dispelling the disorder, the sooner a proper remedy is applied; for this reason, these symptoms of a beginning inflammation should be attended to. A swelling, pain, heat, redness, together with a fever, are the chief; concerning which, see what has been said at §. 382, where the symptoms of inflammation were treated of.

§. 1336. **I**T is cured, 1. By mild absorbents. 2. By the softest diluents. 3. And by external discutients timely applied.

1. As milk turns sour spontaneously, and when it sours thickens, alkaline remedies are in this case recommended; concerning which, see the *Materia Medica* under the present aphorism, and what has been said

said at §. 66. relating to the method of correcting an acid acrimony. However, the gentlest are made choice of; and chiefly those which are called the absorbers of acids, which have no acrimony. The dried bones of fishes, as the jaw-bones of a pike, are greatly praised by some. Fixed alkaline salts, though they certainly have the power of counteracting acids, and make thin what has been united by the acid^a, and are consequently recommended for dissolving coagulated milk, are notwithstanding seldom given but in a sparing dose, and copiously diluted with water; as all mild and gentle remedies suit women in labour. Besides, experiments have taught us^b, “that it is not true which is generally asserted, That that is dissolved, being forced again into its ancient fluid; and that it dissolves alcalics, which were condensed by acids.” For it appeared from what was said at §. 1334, that the milk becomes clotted by the alkaline salt which is mixed with it, though it is not so strongly coagulated as by the acids that are poured in. It moreover appeared, that the milk is much more frequently made thick in the breasts by a fever and by heat, than by a coagulating acid.

2. These answer every end. They soften, relax, and moisten all the indurated substances, and render them more easy to be resolved; and they are made use of in all inflammatory disorders. In the *Materia Medica* there are several forms of this kind. A moist regimen, and a copious thin and aqueous drink, conduce to this.

3. As the hands have an easy access, hence all men have hoped for the greater benefit from the external application of remedies. For whilst these are quickly applied at the beginning of an inflammation, there is great hope of gently dissipating the inflammation. But it is best always to use the gentlest remedies, that, if the inflammation cannot be dispelled, all things may be prepared for a kindly suppuration. In the very beginning of the disease, Moschion^c applied water

^a Ibid. p. 58.
no 58, 60.

^b Ibid. p. 393.

^c Spach. *Gynæc.* p. 6.

ter mixed with vinegar, for he imagined that there was an *astringent* force in the vinegar; at present all men are acquainted with the *dissolving* force of vinegar. For he applied soft sponges wet with vinegar mixed with water, or bread soaked with the same, with pounded dates. These he had recourse to; “the milk rushing to the breasts, with a stretching, a weight, a pain; and also with heat.” But if the heat of the breasts should be increased, he would have such things applied as are capable of relaxing; that is to say, fomentations of oil and warm water. The observations of the celebrated Benevoli, confirmed by Nannoni ^d, shew the admirable use of vinegar diluted with water, not only in the beginning of an inflammation of the breasts, but also when the disorder is far advanced. Some cases are there related, which shew the excellency of this remedy. For according as the inflammation was the more vehement, the vinegar was the more diluted, lest it should hurt by irritating. But if the symptoms of its subsiding did not appear; but the heat, pain, and swelling, were increased in the breast, and the pulse became more quick; he laid aside the vinegar and water, and fomented it only with warm water, as also with ointments and plasters, that he might promote suppuration, having lost all hopes of dispelling the inflammation.

Many have used the most emollient remedies alone. Thus Mauriceau ^e applied a soft poultice made of crumbs of bread boiled in milk; adding to it afterwards oil of almonds, and the yolks of a few eggs. Upon this poultice he put patches moistened with vinegar and water. He expected great benefit from a head of red cabbage, boiled in water till quite soft; which being then pounded in a mortar, was strained through a sieve, that it might be all equal; and then there was added a little honey and oil of chamomile, prepared by infusion. Levret ^f attempts the cure by very soft medicines, by anodynes, and gentle resolvents
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^d Trattato delle malattie delle mammelle, p. 26, et seq.
des malad. des femm. gross. &c. liv. 3. chap. 16. p. 4, 5.
des accouch. p. 156.

^e Traite
^f L'art

externally applied. But when the swelled breast began to soften, he then directed that resolvents alone should be used. He applied a poultice of bread and wine boiled together, sea-water animated with red wine, urine, alkaline salt, and sal ammoniac dissolved in water.

I ordered a breast swelled with stagnant milk to be fomented with Venice soap dissolved in milk and water, and to be exposed to the steam of warm water twice or thrice a-day. If the pain then ceased for a while, I ordered it to be gently rubbed, and there was no occasion for any thing else, if there was any prospect of resolving the inflammation. There is in the *Materia Medica* a poultice, composed partly of softening ingredients, and partly of aromatics and discutients, with the addition of Venice soap, which is an effectual remedy when the breasts are obstructed with milk, and the inflammation at the same time inconsiderable. But when there is great heat, redness, and pain, then the most emollient remedies are the most proper.

§. 1337. **I**F the inflammation is likely to terminate in an abscess, it should be ripened, opened, deterged, and healed as soon as possible, according to the rules laid down in our Surgery.

The symptoms which demonstrate that the inflammation cannot be dispelled, but tends to suppuration, have been spoken of already at §. 386. Therefore, when this is certain, the mildest things alone are serviceable, together with things of a fatty nature. I have advised the flour of oats alone boiled in milk, with the addition of flax, to be applied to women of the poorer sort in the form of a poultice, in order to avoid expence; and this had an excellent effect. But how an abscess which follows an inflammation that cannot be dispelled, should be cured, has been said at §. 402, *et seq.* Hence there remains only to remark upon certain peculiar-

cularities that have been observed in suppurated breasts.

It was before said, that the substance of the breasts consists partly of the cellular membrane, and partly of glands. From this structure, Levret^a has judiciously observed, that this membrane alone may be obstructed, but that most commonly both these parts are affected at the same time. If the cellular membrane only is inflamed, and occasions an abscess, the breasts swell a great deal, but then the swelling is uniform and equal, so that the convex figure of the breast is not altered, unless two distinct abscesses are formed. But generally the intervals between such abscesses are burst at the time of suppuration, and two or more of these unite to make one imposthume. These abscesses are generally very painful, until the matter is discharged either spontaneously or by art. It however was my fortune to see twice, in lying-in women, the whole breast consumed by a violent suppuration, though they scarce felt any pain, and the skin only looked of a reddish hue. The suppuration being over, the skin grew to the parts underneath entirely, and of the whole breast there remained nothing besides the flaccid nipple.

Suppurations in the cellular membrane go on fast enough, but the matter discharged is various and unequal. The abscess, however, is easily deterged, especially if it breaks spontaneously.

But when the glands alone are affected, the skin is not tense, nor is there pain felt in the breast at first, but only when the abscess is near breaking. The suppuration proceeds slowly: nor is it effected all at once in the tubercles; but, when one breaks, another tubercle becomes painful, swells, and suppurates. Hence these kinds of suppurations of the breasts are sometimes protracted for months together, and in persons advanced in years to a much longer time.

Slow suppurations of the breasts are to be promoted by such remedies as quicken motion in the parts, such as the cataplasim recommended at §. 1336. and
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^a Ibid. p. 157.

the embrocations used by Levret, consisting of fixed alkaline salt, diluted in a sufficient quantity of water, with the addition of some soap. For every method should be taken to dissolve the whole into pus, and that nothing hard remain in the breast, which might turn into a schirrhous or a cancer.

I twice saw an extraordinary case in the same woman. Whilst she was pregnant, the right breast began to swell without pain. In the eighth month the swelling was so increased, that the breast reached down to the thigh, and was supported by a sling, otherwise she was unable to walk. I could easily perceive six tubercles in this vast breast, as large as the fist, distinct, and easily moveable. While the most fatal consequences were apprehended, I was surprised to see, after a happy delivery, the whole swelling diminish, the tubercles dissolve, and within the space of two months the breast return nearly to its former bulk, only a little more flaccid than the other. No remedy was applied. In about two years she became pregnant again, the same symptoms happened, and after delivery they ended in the same manner.

Nannoni^c has confirmed all this by practical observations. For he observed, that if an inflammation seized only the cellular substance of the breast, and a suppuration ensued, the secretion of the milk was not thereby diminished; but if the glandular substance was affected, the secretion of the milk was greatly diminished, or ceased entirely, in proportion to the obstruction. He likewise observed, that the suppuration was slower in the glandular than in the cellular substance, and that there was greater danger of a schirrhous hardness remaining.

But if an inflammation seize both the cellular and glandular substance of the breast, then the breast swells unequally. In some places it is harder than in others^d, and the suppuration is sooner effected in the cellular part; whence the abscess often bursts spontaneously, and discharges good pus, while the hard tubercles still

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^b Ibid. p. 159.
p. 48, 49, &c.

^c Trattato delle malattie delle mammelle,
^d Levret, l'art des accouch. p. 157.

remain, which afterwards insensibly come to maturity.

For this reason, persons of skill have endeavoured to promote suppuration by softening remedies, adding discutients, as was said before: nay, they even advise, that the exulceration after a crisis should be left closed, till the pus, having of its own accord burst the coverings, makes a way for itself; for thus, whatever is hard is more easily dissolved, and the intervals between such imposthumes of the uterus as are near each other are loosened, that the pus may flow into one cavity, and so run out by the only opening^e. It has been observed, that there remains a less ugly scar if the abscess bursts spontaneously, than if it be cut with an instrument^f.

The abscess being burst, or cut according to art, the most simple method is the best. Tent is always hurtful; as, the chest being moved by breathing, the breasts are moved at the same time. Nannoni^g never used unctions: but having applied the softest linen towels alone, he constantly fomented the breasts with warm water; at night, he applied a small poultice of crumbs of bread, milk, &c. Levret^h covered the whole breast with a plaster, called the *Nurimberg plaster*, and fomented it with water mixed with alkaline salt, as has been said. At the same time, he wisely advises to move the arm with caution, whilst, upon the bursting of the abscess, the pain ceases or is considerably diminished: for the muscles underneath the breast being in action, the pus is squeezed out, and is prevented from forming sinuses or fistulæ. For authors have long since declared that this sometimes happens. Thus Erotisⁱ, after having advised, when the breasts are diseased by the milk, to foment them with warm water, and then to cover them “with white clay made soft by vinegar,” adds, “But if the place should be ulcerated, with this prescription we may assist the patient: Put upon the place a cleansed root of black hellebore moistened with oil or honey, and over it

VOL. XIV. X “scat-

^e Ibid. 158.

^f Ibid.

^g Delle malattie delle mammelle,

p. 29,—36.

^h In loco citato, p. 159.

ⁱ Spach. Gynæc.

Erot. de passion. mulier. cap. 20. p. 51.

“ scatter the dust of burned burs. For this will over-
 “ flow and deaden the whole ulceration, &c.”

It sometimes happens, that although the abscess has been treated with the utmost skill, there remains something hard: this happens chiefly when the abscess is seated in the glandular parts of the breast. The steam of warm water, gentle friction, and the resolvent fomentations already recommended, should be constantly applied, till the whole is dispersed; for the longer the hardness remains, it will be the more difficult to remove. When this hardness would neither yield to fomentations or plasters, Nannoni^k applied mercurial ointment, which dispersed the hardness in the space of twenty-three days; yet he acknowledges that mercurial unction had been used, even to a salivation, to disperse a hardness of two years standing, without any success: the tumour was indeed diminished in bulk; but the hardness of the remainder of it being increased, was the cause why there remained no hope of cure but from cutting it off. I have known hemlock, taken at once internally and externally, happily dispel such tumours.

Can the pus, gathered in the breasts, and not evacuated, load the inside of the thorax? We meet with a surprising case in Ballonius^l: “ A woman was seized with a pain in her left breast, occasioned by a suppression of the milk, according to all conjecture. There was a tumour; it vanished. At least there was no outward swelling. The pain in that part did not discontinue, though nothing appeared outwardly. The patient grew lean every day. She did not grow better; she languished. There was a violent palpitation of the heart; it was doubtful whence it arose.” Whilst the physicians varied in their opinions concerning this hidden pain, “ at last it was concluded, that an abscess lurked in the inward part; which, if not opened, would occasion sudden death. Contrary to the opinion of many, recourse was had to an application to rot away the flesh.
 “ Some

^k Delle malattie delle mammelle, p. 61.
 mer. lib. ii. Tom. I. p. 151.

^l Epidem. et Ephe-

“ Some passages having been made in it, there run
“ out much pus. She recovered, as it were, by a
“ miracle.”

§. 1338. **P**AINS of the nipples, fissures, and inflammations, are removed by very mild balsamics, and by spirituous cephalics.

The nipples which protuberate from the midst of the convexity of the breasts, vary much, both in thickness and length, in different women. It often happens, that the nipples are so pressed down by the stays which girls are obliged to wear in compliance with a very pernicious custom, that they scarcely come out at all: nay, I have sometimes seen them subside entirely; so that, in the place of the rising nipple, there appeared in the breast a little hole in which it lay hid. It is then impossible to give suck, except the nipple could be got out; which is often happily effected, if at the time of pregnancy, there be frequently applied a little cupping-glass, out of which the air is drawn by means of an air-pump: for then the depressed nipple rises up; and whilst this is often repeated, it begins to rise higher and higher.

The nipples consist of a spongy, elastic substance^a, composed of several bundles of ligaments, the extremities of which constitute the basis and the top of the nipples. These bundles have little plaits throughout their whole length; which, as they are lengthened in drawing out the nipple, vanish; but immediately return again, as soon as the lengthening out of the nipple ceases. Between these little elastic bundles, there are placed seven or eight little lacteal tubes, which gape with little mouths about the top of the nipple; and as those little tubes stick very fast to the bundles of ligaments, they are with them folded and stretched out. A thin production of the cutis covers the nipples, on which the epidermis afterwards lies.

Whilst the child sucks, it often presses the nipple between its lips, and often between the gums, and

by drawing, lengthens it out, and so draws the folded lacteal tubes into right lines, and prepares an easy passage for the milk out of the breasts.

It sometimes happens, that peevish children, by frequently sucking and strongly pressing the nipples between their gums, so irritate them, as to excite pain, and inflammation: to this the sour spittle of the child contributes, whilst children just born are troubled with pimples about the internal parts of the mouth, attended with a fever: about the time of breeding the teeth, whilst the gums itch, they often sadly torment the wretched mother by pressing her nipples; nay, they often tear the coverings, whence arise bloody and painful chaps, which cannot without great pain bear the touch of the incumbent shift.

These disorders are very troublesome to women who give suck; and often render it impossible for them to do it, to the prejudice of the child, and with great danger lest the milk retained in the breasts should be coagulated, and all those ill consequences should follow that have just been spoken of.

Spirituos remedies are generally recommended in fissures or chaps in the nipples, and the spirit of rosemary is directed in the *Materia Medica*; but it is evident, that if they be much chapped, excoriated, or inflamed, these remedies must greatly increase the pain. They may be of use when the nipple is still whole, and not inflamed; but the softest remedies are most proper, such as those enumerated in the *Materia Medica* under the present aphorism, when the nipple is already chapped and very painful.

I made use of the following method for the cure of these disorders, and that with good success. If the nipple, being either inflamed or chapped, felt pain, I ordered it to be fomented with linen rags moistened with the juice of house-leek, often applying new rags, lest they should become dry and should stick; I got a cover made of lead or wax, and open at top, which was to receive the nipple that was in pain, and prevent the shift or the clothes from any way pressing it. I took care to have the chapped places of the nipple a-

nointed

ointed with oil of wax, made clear and very mild by repeated distillations. “ For it is every way an incomparable remedy for the disorders of the nervous nipples which occur in the outermost skin. For in curing chaps, occasioned by the cold of winter, and in curing chaps in the nipples of women that give suck, as well as in the fingers and hands of children, there is scarce any thing like it, if the parts be slightly smeared over with it^b.” By reiterated distillations, the oil of wax, which at first came out thick like butter, and had an ill smell, is rendered thin and fragrant.

Whilst these things are done, the child is under a necessity of sucking milk from the other breast alone; if the first breast should swell too much with milk, it may be emptied by being properly sucked by a woman hired for this purpose, who will easily avoid the places that feel pain, when she applies her lips to the top of the nipple. A breast swelled with milk, is likewise often conveniently enough emptied by suction, by a glass vessel which has a long pipe placed upon it.

In this manner these disorders are generally cured in a short time. But, the clefts being consolidated, and the inflammation thoroughly laid, then the nipple may be strengthened by spirituous applications: perhaps it may be better to begin with such as are diluted, lest the part should be again irritated; and care should be taken to guard against a sudden and excessive wrinkling of the lacteal tubes, whose extremities are opened in the summit of the nipple. Mastich, if it be mingled with an equal quantity of water and spirit of wine, furnishes us with such a remedy.

§. 1339. **M**ILK that is too plentiful and too thin, is corrected by mild and dry food, and by exercise. When it is deficient, it is restored by a moist, mild, and nourishing diet, by fomenting and rubbing the breast, and by removing the cause when discovered.

Milk that is too plentiful, &c.] We are all, as it is well known, nourished by our own milk. Therefore, in women that give suck, part of the food is carried to the breasts, that the child may be nourished; and that part is deducted from the nourishment of the nurse. Whence nurses, if they be strong, and in good health, always use a larger quantity of meat and drink; and thus are able to give suck to a robust child, or to more than one, without impairing their health, as is universally known.

Sometimes so great a quantity of thin milk is carried to the breasts, that the nurse's body is defrauded of its nourishment; whence all the humours grow sharp, and somewhat putrid. There arises a thirst; a slight fever; and, if this too abundant secretion of the milk is not prevented, a true marasmus would follow. It is sometimes a very difficult matter to compass this. Dry food, but mild, of roasted flesh, pulse made of barley, oats, and rice, made somewhat thick, and exercise, are very beneficial. The drink should be sparing, but a little strong. A good mild ale is of service to those who are used to malt liquor: such ales contain a great quantity of nutritious matter; and as they are of a thick consistence, do not ferment; hence they continue mild and soft, let them be kept ever so long. If, upon trying these, the too great secretion of the milk is not diminished, the child should be weaned; otherwise the nurse must soon perish. I have known, even after the child has been weaned, a troublesome dropping of milk from the breasts continue; the nurse growing leaner and leaner every day. When I had tried various remedies in vain, the disorder at last ceased, upon giving every three hours a strong infusion of sage, each dose containing one, two, or three ounces.

When it is deficient, &c.] Every thing of a contrary nature is made use of in this case; for example, moist food; rest; nourishing diluted drink, as a decoction of barley or oats, with a third part of fresh milk mixed with it; copious broths; fresh eggs; and things of the like nature; out of which, a quantity

of good chyle is easily formed by the action of the chylicative viscera. By these a quantity of milk is easily made to flow with the blood, if the woman be in other respects in good health: but then the secretion of the milk in the breast ought to be promoted; this end is compassed by fomenting and gentle chaffing, chiefly by frequent suction either of the child, or, if it should be unwilling, of another woman. For we ought not easily to despair in this case; since, as medical history informs us, milk has not only been brought into the breasts of virgins, but of men, whilst they endeavoured, as they thought, to quiet ill-humoured children by making a shew of giving them suck. If other copious evacuations by stool, sweating, &c. be the cause; these are to be stopped.

There may however be such causes of the scantiness of the milk, as either cannot at all, or cannot without great difficulty, be removed. Hippocrates has made the following observations: *Generally speaking, indeed, those whose courses are inconsiderable, are liable to be without milk: for they are dry, and of a very dense habit of body*^a. And in another place, speaking of those inconveniences with which cities, situated towards the north, are infested, he takes notice that many women become barren, *on account of the waters, which are rough, unpleasant, and cold; their courses are not regular, but scanty and vitiated*^b. And then he adds: *But when they bring forth, they cannot give suck to their children; for the milk is destroyed by the hardness and ill taste of the water*^c.

If there be a defect in the structure of the breasts; if the whole body be dense and brawny (such women are commonly called *viragoes*); in such there is often only an appearance of breasts, and all the vessels are so

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^a Ut plurimum vero quæ pauca menstrua demittunt, eas sine lacte esse contingit. Sicciores enim sunt et densiore corporis habitu. *De Natura Pueri, cap. 10. Charter. Tom. V. p. 323.*

^b Propter aquas, quæ sunt duræ, crudæ, et frigidæ; purgationes enim mensium non contingunt idoneæ, sed paucæ et pravæ. *De aere. locis et aquis, cap. 2. Charter. Tom. VI. p. 192.*

^c Quomodo vero pepererint, pueros nutrire non possunt. Lac enim aquarum duritie et cruditate extinguitur. *Ibid.*

contracted that they are unable to yield to the milk that is impelled towards them; then the milk will certainly fail. Of such, Hippocrates has said: *But there are some, who by nature have no milk, and some whose milk fails before the time. But these have naturally solid and dense flesh; therefore, as the passage is dense, there is not humour enough carried from the belly to the breast*^d. I have sometimes seen breasts of a great bulk, but quite overwhelmed with fat, so that all the lacteal ducts being compressed by the superincumbent fat, they could not admit so much as a drop of milk.

It is very evident that these causes cannot be removed by any art.

Of the DISEASES of CHILDREN.

§. 1340. **A** CHILD just born is subject to diseases peculiar to itself, arising from a glutinous, cheesy, and viscid filth, with which the mouth, gullet, stomach, and intestines, are filled.

Having treated of the diseases of virgins and pregnant women, and also of difficult deliveries, and the disorders of childbed, we come next to treat of those peculiar to infants just born. For though, as soon as it enters upon life, it is subject to many diseases, (for example, it will appear in the following chapter, that a fetus has had the small pox in its mother's womb), yet here we shall treat only of those whose causes exist only at birth, and which are not observed during the rest of life, or at least not often.

A child just born suffers a considerable change. It was a little before enclosed in its mother's womb, defended

^d Sunt autem, quæ natura lac non habent, et quibus lac ante tempus deficit. Ex vero natura solidæ sunt, et densæ carnis: ideoque, cum via densa sit, non a ventre ad mammas satis humoris deferitur. *De Mulier. Morb. lib. i. cap. 72. Charter. Tom. VII. p. 71.*

fended by a circumambient fluid from all compression, and secured against all the effects of the air. At its birth, it suffers new uneasiness from the air to which it was unused, and sometimes from the rough treatment of the midwife. But what a change does it suffer in the internal parts! The lungs, which before received only a small quantity of blood, now transmit that of the whole body, and pour it into the left ventricle of the heart; and this viscus, in a collapsed state before, is now expanded by the inspired air. The diaphragma, while it acts, enlarges the cavity of the thorax, presses down the liver, and in the liver itself there is a new circulation of the humours. It is not therefore to be wondered at, that a child should cry upon coming into the world, though in other respects in the most perfect state of health. That sudden and extraordinary change occasions its crying. This Pliny has prettily expressed in these terms: “ Being happily
 “ come into the world, he lies with his hands and
 “ feet bound, a weeping creature, tho’ born to command others; and begins his life by suffering, for
 “ one fault only, namely, because he is born ^a.”

When the child is born, it is still tied to the placenta by the umbilical chord; which connection should be dissolved: for hitherto it partook of one common life with the mother; but as soon as the navel-string is cut, it has nothing in common with its mother, but lives a life of its own. For this reason, Levret ^b has judiciously advised neither to bind or cut the navel-string, except the child has first breathed: for sometimes they are born pale and weak, especially if they have stuck long in the passage out of the pelvis, and they do not cry; by gently shaking the child, by chafing it, by stirring the jaws and the nostrils with a feather, by putting salt upon the tongue, and by otherwise stimulating, they rouse the sleeping motion; and whilst these things are done, they keep up the free intercourse between the fetus and its mother by the navel-string.

But if the child should have a swelled pale face,
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^a Hist. lib. vii. in proem.

^b L’art des accouch. p. 210.

and should not breathe, or breathe but little, the navel-string should be immediately cut, though not tied, that a certain quantity of blood may be discharged, in order to relieve the lungs now loaded with blood, and not yet dilated by a free respiration, otherwise there would be danger of suffocation. But as soon as the child begins to cry^c, the navel-string is to be tied.

But the navel-string is tied at the distance of four, five, or six fingers breadth from the navel, that room may be left for a new ligature, if the first should slip, the navel-string falling down; or if, being tied too strongly, it should cut the umbilical vessels; the consequence of which might be a hæmorrhage.

Therefore this caution alone is required, that the navel-string should not be cut at a place near the navel: I have known it the custom in some families to tie the navel-string at the distance of ten or twelve fingers breadth, and not to cut that part of it which was beyond the ligature; but to apply it rolled up in a linen rag to the body of the child, till the whole fell. This rag being of a size any way considerable, causes some inconvenience, but no mischief.

However, the separation of the navel-string, at whatever distance it be tied, always happens near the navel. For the skin of the child's belly, covers the navel-string at the distance of a few lines; and in the place where the skin ends, there is made a separation, which generally happens on the fourth, fifth, or sixth day.

The whole body of a child just born is covered with a slippery glue, the quantity of which varies in different children; for which reason the skin is rubbed with soft sponges in a warm bath, that it may shine: then the whole skin looks red, as if there was something of St. Anthony's fire upon it^d; and after a few days, it is customary for the epidermis to be scaled. The redness of the skin appears as plainly in a negro as an European; and it is vulgarly thought the skin will be the brighter, and the fairer afterwards, the red-

^c Ibid.

^d Brouset *educat. med.* Tom. I. cap. 3. p. 62.

redder it has been in the child when just born ^a.

The brightness of the skin is justly praised, not only in children newly born, but afterwards likewise: for children are subject to many cutaneous disorders, except the skin be every day rubbed gently. Galen ^f advised, that the whole body of a child newly born should be sprinkled over with salt, that whatever was glutinous might be the more effectually rubbed off: his view in directing this to be done, was, that the skin might be rendered the more dense and solid; but it hardly seems proper, that the skin, as it were somewhat inflamed and red all over, should be irritated by a thing of so stimulating a nature as salt. It will be sufficient gently to wash off the dirt with water moderately warm, with which some mix a little soap and a small quantity of wine.

Whilst the child remains in this bath, it should be carefully examined whether any defect appears upon it. For sometimes, especially in difficult labours, tumours appear in the hind part of the head, which are generally removed by discutient applications. Levret ^g however observes, that children who have such tumours seldom live long, but generally die convulsed, and that tumours in other parts of the head are not attended with the like danger. If the sutures are too far distant from each other, there is reason to apprehend some fatal consequence; for either the bones are not sufficiently formed, or lymph collected in the cavity of the skull threatens a hydrocephalus.

It happens likewise in a difficult delivery, that some limb is put out of joint or broken. Peu ^h candidly acknowledges, that such misfortunes have befallen him: the parts are immediately to be reduced to their natural situation, and the cure generally succeeds happily in these tender bodies, and without leaving any deformity behind it. Levret ⁱ bears witness to the same thing.

At the same time it should be examined in new-born chil-

^c Vander Monde *essai de perfect. l'espee humaine*, Tom. II. p. 6.

^f De sanit. tuend. lib. i. cap. 7. Charter. Tom. VI. p. 50. ^g L'art des accouch. p. 212.

^h Pratique des accouch. liv. ii. chap. 1. p. 413. ⁱ L'art des accouch. p. 214.

children, whether the passages of urine and stool are disengaged. If it has voided both its urine and excrements after birth, there is no danger to be apprehended: if not, these parts should be examined whilst the child is bathed.

Sometimes, in new-born children, the anus has been found of a proper structure, but entirely closed up by a præternatural membrane: there was therefore no passage for the excrements to come out at; and if they should not be forced out of the body, the worst consequences would follow, and at last death, as will appear at §. 1345. If such a membrane should stick about the beginning of the anus, the cure generally succeeds happily enough by cutting away this impediment: La Motte^k tried this upon two children with success. After the bowels had been well evacuated, he washed the anus in spirit of wine, and covered it with dry linen rags; and thus, in the space of a few days, completed the cure. But he made no use of tent; because that, by its bulk, like a suppository, perpetually provoked to a discharge of excrements.

In this case, a jutting tumour generally appears in that place of the anus, in the midst of which the black colour of the child's excrements appears: if that place should be pressed, it shrinks backward like soft paste; but the finger being removed, the tumour presently returns again^l; which Levret does not only advise to cut, but would have it in its whole circumference cut in a circular manner. La Motte, however, cured it by simple cutting; and others have been successful by the same method.

It is a much more difficult case, if such a closing membrane should stick in a higher place of the rectum intestinum. We meet with an account of such a case^m: The anus appeared to be well formed in the child; but it had not had a stool for two whole days after its birth; whence all the ill consequences which arise from a retention of the excrements followed.

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^k Traite des accouch. liv. i. obs. 86. p. 129.
l'art des accouch. p. 216.

^l Levret,
^m Acad. de Chirurg. Tom. I.

Recourse was had to clysters to no purpose; they could not penetrate to the cavity of the rectum intestine: upon examination, there was a thin membrane found, closing the cavity of the intestine; and having put the little finger into the anus, an instrument was thrust in, and pushed up its passage along with the finger, as far as the closing membrane; which then, the lancet being thrust out, which is hid in the cavity of the phleme, was cut with safety, and the hole made with the top of the finger was dilated. The child soon after had a stool, and the anus afterwards performed its proper function for the two months during which the child lived; afterwards it died of some other disorder. The death of this child could not with any appearance of probability be ascribed to this operation, as it had survived it so long.

But when there appears no trace of the anus, there seems to be but little hope left. The child must inevitably die, if the excrements do not come out; hence, according to the rules of art, an uncertain remedy is to be preferred to sure destruction, if the parents would suffer it. Hence eminent surgeons, having cut the place where the anus is naturally to be found, have endeavoured to make a way to the rectum intestine, in hopes of making a passage for the retained excrements, and then they were for preparing an artificial anus. Petit ⁿ has pointed out a method, and shewed the cautions to be observed in performing such an operation according to the rules of art. He has preferred the triangular needle to other instruments: but he would have it of the thick, short sort, that the needle being brought out of the case, the lancet or little blade may be safely thrust in; in a word, he neglected nothing which art required. But all things are uncertain; we do not know what impediment may be hid: yet anatomy puts it out of all doubt, that there are impediments which cannot be mended by any art. The celebrated Littre ^o found, in a child that died six days after its birth, the rectum intestine divided into two parts, which still however co-

hered by some small threads a thumb's breadth in length ; each extremity of the intestine so separated, was closed. It is obvious enough, that such a disorder cannot be known till after death ; and though it should be known, there is scarce any hope of curing it. Mention is indeed made of some method : but who would venture to open the abdomen of a living child, to search for the extremities of the intestines, to open them when found, and then to join them to each other, or at least so to unite the upper extremity of the intestine, first opening it, to the cut in the abdomen, that the artificial anus may continue during the child's whole life in the place of the wound ? No such cure was ever attempted by any one to my knowledge.

Sometimes the whole rectum intestinum is wanting. A very able surgeon^p did not find the smallest trace of an anus in a new-born child : he made an incision deep enough ; having thrust his finger into the wound, he did not find the intestinum rectum ; he thrust the triangular needle more deeply through the wound to make way for the excrements, but nothing came out but a few drops of blood. After death, he found that the intestinum rectum was quite gone, and that the colon being full of excrements, and freely floating in the abdomen, ended in an extremity perfectly closed.

Wherefore Levret^q seems to have been in the right in advancing, that such disorders cannot be cured, except the rectum be entirely whole, even to the integuments. Sometimes the extremity of the intestinum rectum, deviating from its true path, is united to the bladder in male children ; then the excrements roll into the cavity of the bladder, and cannot come out by the urinary passage, except they are liquid : whence it is evident, that such unhappy children cannot live long^r. In the female sex, it has been observed, that the end of the rectum intestinum gaped into the

^p Medical essays and observations, Vol. IV. n^o 32. p. 442. ^q *Art des accouch.* p. 216. ^r *Acad. des Sciences*, in 4^{to}. 1755. Hist. p. 50.

the pudendums. Such may survive; and I have known a marriageable girl, otherwise in perfect health, have this loathsome deformity.

I am not ignorant that practical examples are alleged, which shew that this operation has been performed with success whilst there remains no trace of the anus; but these examples seem to be somewhat doubtful. The case of Hildanus^t is usually cited, who is believed to have in this manner preserved a child six days old, that had never voided its excrements, and was in imminent danger of death. It was happily cured; and afterwards Hildanus received information from the consul of the place where the child who was cured lived, that it lived to the age of eighteen years in good health. But certain it is, that the very words of Hildanus, prove that there was some appearance of an anus. Thus he expresses himself: "The anus was covered with a very hard membrane, in which there was scarce any appearance or traces of the anus, except a spot somewhat livid, (occasioned by the excrements appearing.) There, having made a small incision (lest the contracting muscle should be hurt) with a razor wrapped up in a linen rag, and then having thrust a probe into the anus, and dilated what remained, a large quantity of excrements was thrown out." From hence it is manifest, that the intestinum rectum was whole, even to the integuments.

The other case we meet with in the celebrated surgeon Saviard^u, of a child, in whom there was no appearance of an anus: he thrust in a long lancet, with which he used to open abscesses of a considerable size, the length of three fingers breadth; and then the excrements came out: he dilated the hole that had been made, and bound up the wound in the usual manner. There therefore remains no room for a doubt, that a man of such sincerity attempted an operation of this nature. But he observes a profound silence with regard to its success. Nor had those cases which

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^s Ibid. ^t Opera omnia, cent. 1. obs. 73. p. 54. ^u Ob-
servat. Chirurg. n^o 3. p. 8.

are to be met with in the academy of surgery, an happy issue.

Impediments of the like nature have been found in the urinary passage. For sometimes the orifice of the urinary passage was not open in the nut or the clitoris, and then the cure was not difficult: Sometimes part of the urinary passage is entirely wanting, and then this disorder cannot be radically cured ^v. But this disorder is longer borne by the child, than if it was in the intestinum rectum. For the urine finds a passage for itself; sometimes it bursts out through the navel; sometimes it makes a little passage by the scrotum; we have an account of such a case ^w. But as there was no retention of the urine, and the child as it grew up was not troubled with any disorder, that prudent surgeon did not chuse to attempt any thing. I have seen some in whom the orifice of the urinary passage gaped under the nut in the lower part of the yard.

It sometimes happens, that a new-born child has some superfluous limbs, which are of no service, but are rather the occasion of inconvenience. Thus I have sometimes seen six fingers, both upon the hands and feet: such superfluous fingers generally consist only of flesh, not supported by any bone, and they render the hands deformed. La Motte ^x bound four such fingers with a waxed thread in a child just born, and they all dropped off within three or four days, and scars were spontaneously formed where they had been. Nor did it any way appear that these ligatures did the child any hurt.

But all are not agreed with regard to the time when these superfluities should be retrenched. Some advise to do it after the child is weaned, or even later: others immediately after its birth; which opinion Levret ^y adopts, on condition the child is in good health: for he assures us, that no one ever repented of doing this; and that many other surgeons, by his advice, attempted

^v Levret, l'art des accouch. p. 218.
accouch. liv. i. obs. 85. p. 129.
des accouch. p. 220.

^w La Motte traite des
^x Ibid. p. 128. ^y L'art

ed it with good success.

A new-born child, as has been said, is moist, throughout the whole surface of its body, with a slimy glue, often very thick. Glue is generally called a half fluid body, of which one part being moved, the neighbouring parts are attracted, whilst the whole mass of glue does not change its place. But a glue of a like nature is found in the mouth, the stomach, the gullet, and the intestines, which comes spontaneously from new-born children out of their nostrils, or even out of their mouth, or is taken out by the midwife whilst she clears the skin.

As long as the fetus clings to its mother's uterus, it is washed on every side by the liquor of the amnion; this liquor, whilst the humours run out, the membranes being burst at the time of delivery, often appears pretty viscid; the whole skin is covered with such a glue, which therefore seems to owe its origin to the liquor of the amnion: but as many are of opinion, that the fetus not only receives nourishment from its mother by the umbilical vessels, but is also nourished by the mouth, swallowing the humour of the amnion, they easily thought that they knew the reason why the hollow viscera are covered, from the mouth to the anus, with such a glue as is found on the surface of the skin.

Others, on the contrary, have imagined that the liquor of the amnion is rather excrementitious, and is produced by the body of the fetus; that the fetus does not swallow in the womb; that it always has its mouth shut; that the liquor of the amnion is not to be found in the stomach and the intestines of the fetus. They add, that fetuses have been observed which were without a head, and yet grew. Many other arguments, both for and against this opinion, are to be met with^z. But this does not seem to be a proper place to discuss and examine all particulars. It is sufficient to know, that such glues are found in the passages of the first coction, as well as on the external surface of the skin.

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^z Medical essays and observations, Vol. I. p. 171, &c. Vol. II. p. 121, &c.

At the same time it is known, that tough, slimy matter, is secreted in the mouth, the gullet, the stomach, and the intestines, during the whole life; so that this being secreted in the fetus, and not thrown out, may be accumulated. Perhaps, immediately after birth, a greater secretion is made, as in the fetus all the secreting organs appear swelled: thus the liver is found big and full of juice; and in the same manner the whole glandular system swells.

But it is said in the text, that not only a glutinous but a tough matter resembling cheese, is found in the primæ viæ of a child newly born. It appeared in the preceding chapter, that real milk comes to the uterus chiefly at the latter end of the time of pregnancy. Hippocrates has said: “But a child, with compressed
“lips, sucks from its mother’s uterus both nourish-
“ment and breath, &c. but if any body should ask
“how it can be known that the child in the uterus
“draws and sucks, this answer may be made him:
“When children are born, they have excrements in
“their intestines; both men and beasts, when they
“come into the world, quickly void their excrements:
“but they would not have excrements if they did not
“suck in the uterus; nor could a child, as soon as
“born, suck the breasts, except he had sucked in the
“uterus^a.”

Some would have it, that, as in children just born the breasts have been found swelled with milk in both sexes, the fetus sucked its own breasts in the uterus, chiefly at the latter end of the time of pregnancy. Certain it is, that the situation of the child, and the easy flexibility of the back bone, favour this opinion. I have often seen, in children just born, the breasts so much swelled and so hard, that there was occasion for fomentations and plasters to dissolve that gathering. It is likewise sometimes observed, that the breasts are raised a few days after the birth. Some have imagined that this is occasioned by the tying of the navel-string; for the umbilical artery being compressed, they would have it that the blood goes backwards through
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^a De carnibus, cap. 3. Charter. Tom. V. p. 304.

the epigastric arteries, communicating with those of the breasts. This may perhaps be true. A physician was surprised, that a fetus, two days after its birth, was seized with a shuddering, then with a heat, and was feverish: at the same time, its right breast swelled, which whilst he gently pressed, a few drops of milk run out of the nipple. The physician examining the matter, found that both the child and its mother were attacked by the milk-fever about the same time. He afterwards was informed by the parents, that when the right breast had by degrees entirely subsided, the left breast swelled in the same manner; from which there came in likewise a few drops of milk ^b.

But the argument of Hippocrates, namely, that a new-born child could not suck unless it had been used to sucking in the womb, does not appear to be altogether conclusive. For he himself, as I have observed upon another occasion, at §. 1. acknowledges, “ That nature taught by no one, and without instruction, effects all things requisite:” If the calf with its yet unarmed forehead strikes, if the fawn kicks with its hoof still soft, it will not appear so extraordinary that a new-born child should be able to suck though it had never sucked in the womb.

§. 1341. **F**ROM which cause alone are produced nauseas, vomitings, gripes, hickups, and convulsions; and these are followed by indigestion of the aliments.

Whilst such an inert glue floats in the stomach, or sticks to the jaws, it produces qualms and vomiting, by irritating only. In grown persons, very disagreeable qualms are often occasioned by this cause; nay, by only shaking a little feather in the jaws, qualms and vomiting are often occasioned, as is well known. Therefore, in tender, new born children, the same things may happen from a slighter cause; if such glutinous scrapings should stick about the orifice of
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the gullet, a sobbing will follow; gripings in the intestines will be produced by the same cause, especially if that glutinous matter, already beginning to be corrupted by the free access of the air, should be made more sour: but these gripings are oftener occasioned by the excrements being retained too long, which shall be treated of hereafter.

Whence the reason is evident, why Hippocrates^a reckons vomiting amongst the disorders of young children, and of children just born. But as it was demonstrated at §. 652, that the immediate cause of qualms and vomiting is a convulsion of the muscular fibres of the jaws, of the gullet, the stomach, the intestines, the diaphragm, and the abdominal muscles; it is obvious enough why qualms and vomiting, if they be violent or last long, excite general convulsions; as the whole nervous system is so moveable in tender children, and so many extraordinary accidents happen to children just born. Hippocrates has well reminded us of this, where he treats of children just born: these are his words; “But in the room of spirits, and humours of a similar nature, with which it must have a great familiarity and connection in the uterus, it uses things external, more crude and dry, and less assimilated to the nature of the human body (ἡ σαρὶς ἐξ ἡνδρώπων σκευνομένη^b.”) For it is known, that the humours of the human body are produced, from the aliments taken, by the strength and action of the viscera and the vessels. For as long as the fetus remains in the mother’s uterus, nothing comes to it but what has been subdued in the mother’s body, and has acquired the nature of its humours, or makes a near approach to it. As soon as it is born, the navel-string being cut off, all communication with the humours of the mother ceases; and it must receive its nourishment by its mouth, and subdue it by its own strength: wherefore Hippocrates soon after adds; “From whence arise many pains, likewise many deaths; as, generally speaking, changes of place and food
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^a Aphor. 24. sect. iii. Charter. Tom. IX. p. 119.
mestri-partu, cap. 2. Charter. Tom. V. p. 351.

^b De ocli-

“ produce diseases even in men.”

It is obvious enough, that the cleansing and removing this glutinous matter are required: for if it was to remain, indigestion of the food taken in would necessarily follow. For it is known from physiology, that the arteries, through the whole tract of the intestines and the stomach, throw out, at every inconsiderable distance, a thin humour, which moistens and dissolves the contents of the stomach and intestines, and makes them fit to be changed into chyle, to be absorbed by the lacteal vessels. But if the sides of these viscera should remain covered over with such a glutinous crust like varnish, the arteries will neither be able to exhale, nor the veins to suck in; insomuch that the food which has been taken, being scarce changed, and retaining its nature, the cavity of the intestines will be filled, and the abdomen will quickly swell, whilst the rest of the body will be emaciated for want of nourishment.

It is likewise known, that the pancreatic juice, and both sorts of bile, run into the duodenum: if that canal, covered over with tenacious glue, should refuse a passage, or afford one with great difficulty, the actions of these viscera will be disturbed; and the bile, having returned into the blood, will occasion a jaundice. For the liver is of a considerable bulk in young persons, and bile is found very plentiful in children just born, being separated and gathered in the last months, whilst the fetus remains in its mother's uterus, and yet is not thrown out, as the diaphragm being at rest does not move the adjoining liver before the child breathes.

This is the reason why the jaundice is so frequently observed in children just born; but it is, generally speaking, quickly cured: for, the glue which obstructed the passage of the bile being absterged, the disease soon ceases; and the bile itself, whilst it runs into the intestines, most efficaciously dissolves all that glutinous matter, makes thin the tough, and promotes stool by its natural stimulation. Upon which subject,
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see what has been said at § 75. where the cure of diseases, occasioned by a glue which comes of itself, was treated of.

§. 1342. **D**ISORDERS from this cause are easily cured by fasting ten or twelve hours ; by giving a little wine mixed with honey, in small doses, during this time of abstinence ; or by adding to it the most gentle stimulating purgative.

However, all those ills which owe their origin to glutinous matter accumulated in the primæ viæ, are not hard to be surmounted. For a fast of ten or twelve hours, is often alone sufficient to remove them. By the motion of breathing, all the abdominal viscera are agitated and shaken. The bile, which is very copious in children just born, running into the intestines, if its passage be not obstructed, dissolves that glue, and cleanses the cavity of the stomach and intestines: the peristaltic motion being increased by the natural stimulation of the bile, wipes off that glutinous matter by friction, whilst the bile itself being mixed with it diminishes its tenacity. For, as has been before observed on another occasion, the intestines have no great cavity in a living man, but the sides, being of a considerable thickness, touch each other mutually ; whence the filth, which naturally daubs the hollow surface, being constantly separated by the peristaltic motion, is wiped off, lest it should be a burden to it by being accumulated. Hence the stomach and intestines are so cleansed, merely by an abstinence of a few hours, as to be fit conveniently to receive, retain, and digest, the aliments which are given to new-born children.

This absterfion and expulsion of the glutinous matter is admirably and safely promoted, if a little honey, diluted with wine or mead, is often given, in a small quantity however, namely, a dram or two, during this time of abstinence: a gentle stimulating pur-

urgative, added to these, may be of service; such is to be had from the syrup of succory with rhubarb; with which a little Venetian soap is likewise mixed, which furnishes a powerful and gentle remedy for attenuating the glutinous matter. The use of soap is chiefly recommended if a tincture of the jaundice appears upon the skin, or the urine should stain the linens with a yellow colour; for then we are certain that the free passage of the bile into the duodenum is obstructed by the glue; which is to be wiped off as soon as possible: prescriptions of such remedies are to be met with in the *Materia Medica* at this article.

Moschion^d recommends honey somewhat boiled for children just born, or he directs warm mead to be poured into the mouth, “that the stomach and belly may be purged.” Thus it is prepared to take its milk.

But what nourishment is good for new-born children after the cleansing of the *primæ viæ*, is not agreed upon by physicians. Aëtius^e, in like manner, recommends clarified honey and warm mead, poured down the throat: then he directs, that the mother, having first wiped the thick milk from her breasts, and applied a fomentation of warm water, should give suck to the child; but he soon after adds, “it is however better to abstain from the mother’s milk till the fourth day.” Paræus^f would have the lochia thoroughly purged off before the mother should give suck to the child. Nay, Moschion^g entirely disapproved of the mother’s milk, and preferred that of another person; because he apprehended that from the fatigue undergone in delivery, and the evacuations after, the milk must be ill-conditioned, thick, and of difficult concoction.

Perhaps this reasoning may at first sight appear specious; but as soon as physicians scorn to follow nature, they generally err.

After an abstinence of a few hours, the new-born child has occasion for food; wherefore, if milk is denied

^d Spach. Gynæc. p. 7. n^o 71, 72.
^f Spach. Gynæc. p. 413.

^e Lib. iv. cap. 3. p. 67,
^g Ibid. p. 7. n^o 73.

nied it, a different sort of food ought to be given it. They give it pap made of milk or broth. But these are unfit for it; being altogether different from the food that was used by the child whilst it remained in its mother's womb. A few hours before, it lived upon its mother's humours: humours of the like nature are ready in the breasts, prepared in the mother's body, for the use of the new-born child, who longs for these, and knows how to suck, though taught by nobody.

A wise physician, after delivery, procures the woman delivered a gentle sleep; by which when she has been refreshed, there is nothing to be apprehended from the pains of delivery which are over. Nor is there any thing to be feared from the lochia, though they are of a nature somewhat malignant; of which enough has been said in the preceding chapter. That first milk is not thick, but diluted and thin, and different from that which at the time of the milk-fever will be gathered in the breasts. That first milk, gently purges and cleanses the first ways. The celebrated *Monro*^h admired the wisdom of the Creator, who supplied children, newly born, with a thin, diluted milk, which purges gently; and, the first ways being well cleansed, gave another three or four days after, more thick and more nourishing.

Wherefore I always took care that the children should suck their own mother's milk after she had been refreshed with a gentle sleep: I always gave the same advice to others, nor did they ever repent of having followed it. We observe the same diversity of milk in cows immediately after delivery.

Whence it is at the same time evident, new-born children, who have not an opportunity of sucking their mothers, stand the more in need of being gently purged, that the *primæ viæ* may be cleansed; except it should be their fortune to have for their nurse a woman just brought to bed, which happens but very seldom. Wherefore, when I chose nurses for princes just born, I always preferred the woman that had the thinnest and most diluted milk; though such milk is, generally

^h Medical essays and observations, Vol. II. art. 11. sect. 13. p. 742.

generally speaking, censured: I at the same time observed, that such milk afterwards acquires greater consistence by degrees. Nor do I apprehend any danger from the thin sort of milk: but if a strong child should be afterwards thought to have occasion for a thicker sort of milk, a new nurse may be substituted in the place of the first.

§. 1343. **B**UT epithems moderately aromatic and spirituous, are often of great service in washing away this load of mucous phlegm.

It is customary sometimes to cover the abdomen with aromatic applications of a mild nature, lest the skin, being red, and as it were affected with St Anthony's fire, should be too much irritated. They are useful chiefly when the new-born children are weak, and all their motions appear to be faint and languid. There is reason to hope, that, by the stimulation of these, the strength of the stomach and intestines may be increased, and so that glutinous load forced out. Prescriptions of such applications are to be found in the *Materia Medica* at this article; according to which directions, others of a similar nature may be composed. Some, for the same purpose, apply plaisters with mild aromatics, such as cerates, Galen's stomachic, and others of a like nature. But a better effect is expected from those recommended in the preceding paragraph.

§. 1344. **I**NFANTS generally suffer a great deal, when the meconium is not soon enough discharged, either on account of their weakness, the hardness of the matter, its quantity, or the dryness of the intestines.

In a mature fetus, near its birth, there is found a feculent, black matter, or a matter of a colour between black and green, which is tenacious and viscid,

cid, and which generally fills the whole tract of the great guts as far as the extremity of the rectum. This excrementitious matter shines; and as in its colour and tenacity it resembles the thickened juice of poppies, called *opium* in the shops, hence it is by the ancient Greek physicians called *μυκκαριον*, in Latin usually rendered by the word *papaverculum*. This excrementitious matter being accumulated in the intestines of the fetus, irritates the fibres, creates pain and a tenesmus; whence, at the time of delivery, the restless child excites pains in its mother, or increases those which she has already: when the child, being born, has breathed some time, this black, excrementitious matter generally comes out by the anus; not indeed all at once, but generally a pretty large quantity.

For as the fetus swallows its own spittle, and in its mouth, gullet, and stomach, collects the mucus separated in the intestines, which are daubed with the same, receives the bile and other humours which flow in, and all these deposit certain sediments, such matter is accumulated in the great guts, from the collection of these. If the fetus, at the same time, swallows the liquor contained in the amnion, which appears highly probable to many^a; then the feculent remains of this may increase the quantity of the excrements. The quantity of the excrements is usually such, that the great guts are sufficient to contain it: for the excrementitious matter is seldom found in the small guts. That black filth, accumulated during several months, should come out of the body, that the new-born child may continue in health; and frequently part of it comes out by the anus as soon as it is born. But if the child should be languid and weak, then this evacuation happens later: if the excrements be hard, they will be with difficulty forced out by the efforts of the child: this however happens but seldom; but they rather stick to the sides of the intestines, with a troublesome glutinous quality; for such is their tenacity, that they are with difficulty washed from the posteriors and the thighs, and stain the sheets

^a Vide instit. medic. Eoerh. sect. 682, 683.

heets with spots which are not easily got out.

If a great quantity of excrements should remain in the intestines, a longer time is required for the evacuation; for, as I said before, all the excrements are not forced out at once.

It is well known, that the cavity of the intestines is naturally slippery and moist; and that the intestines, above all, are daubed with a copious thick mucus, that they may be the better able to transmit the hard excrements: but it is observed, that the intestines contain the more glands, and the more filth, the nearer they are to their extremity^b. For this reason, there sticks so great a quantity of fat to the anus, that the neighbouring parts may give way to the excrements which distend the rectum, and all be lubricated. If that mucus or fat be wanting, the child will continue constive a long time. But this dryness is seldom observed in new-born children, whose whole body is soft, moist, and full of juice.

§. 1345. **F**ROM a retention of the meconium, and the admission of air, it becomes acrid, acid, putrid, and is resolved into vapours; hence arise gripes, convulsions, nauseas, vomitings, hickups, coughs, sneezings, cryings, weepings, watchings, frights, fevers, wastings, and at last death.

No one can make it a doubt, that the excrementitious matter, which is of no use to the body, and which distends and loads the intestines in which it is held, should be driven out of the body. Immediately after birth, nature itself spontaneously tries this evacuation, if nothing opposes it.

For as long as the child remains in its mother's uterus, no air can enter the cavities of the stomach or intestines. It was often said before, that the extravasated humours gathered in the cavities of the body, remain unchanged for months together; and when,

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upon being taken out, they are exposed to the free access of the air, they quickly rot, and diffuse a most nauseous smell on every side. In the chapter upon Dropsies, there occur many such particulars, which prove this to a demonstration. The same thing is to be apprehended from the excrements, if they do not quickly leave the body. I have sometimes observed, that the excrements, which are voided immediately after birth, have not a bad smell; but if they be a few hours left upon the linen, then they exhale something of an acid, or something of a putrid nature, according as they are disposed this way or that. For every thing feculent that is collected in the intestines of the fetus, from either bile, the gastric or the pancreatic juice, &c. being animal product, tends rather to corruption. It has been said before, that it is highly probable, that, during the last months of pregnancy, some milk comes to the fetus, which is then pretty well grown. The milk however grows sour of its own accord; yet that part which constitutes the milk, namely, the cheese, grows stale, if it be fat: otherwise it inclines to the animal nature, and grows stiff like horn, if brought near the fire; and if it be burned, it diffuses such a smell as the horns and hoofs of animals whilst they are burned.

It appeared before, in the chapter concerning Belching and Wind, §. 646, 647. that putrefying and fermenting humours furnish matter for belching and wind. If the air, being disengaged from these humours, should distend the stomach and intestines, and wander freely through them, it is forced out either upwards by belches, or downwards by winds. But if there should be some irritating, sharp matter, by means of which the fibres, being bound by a convulsion, obstruct the free passage of the flatulent matter, then the closing membranes are stretched and pulled asunder; whence arise intolerable pains and uneasiness, which soon cease upon breaking wind, and return again if the cause of these disorders be not removed. But if inflammation and fever be added to them, even in robust and adult men, intolerable pains ensue,
and

and frequently death itself.

The reason is therefore obvious, why gripes and pains are occasioned by a retention of the fetus's excrements: which disorders, the wretched creatures give proofs of by the restless and perpetual tossings of their bodies, by cries, and tears; though, as they scarce ever shed tears before the first month of their age is elapsed, they may be said rather to cry than to weep.

But if, as has been said at §. 1341, so many ills, might be occasioned by nothing but the glue irritating the primæ viæ by its bulk, how much more are they to be apprehended, whilst the excrements of a pitchy tenacity, being too long retained, acquire an acrimony from the free access of the air, and irritate the places to which they stick.

New-born children, when they are well, are almost always asleep: but if they feel pain, they are wakeful; when the pain ceases upon their breaking wind, they soon go to sleep: the pain returning, they leap up, as it were, terrified; violent and universal convulsions follow, and these sometimes quickly prove mortal. If they survive these, they are soon emaciated, if the excrements are not forced out; insomuch that I have known some, who were fat at their birth, become lean in the space of three days. Nor is this surprising. Whilst they were in the mother's uterus, they had perpetual and uninterrupted nourishment: but now, qualms and vomiting prevent their taking in any food; and if they take in any, it is not digested, but corrupted; whence the vitiated load in the bowels will be increased. Sleep, which is so great a refreshment to children, is either quite banished, or is constantly interrupted by pains, when it should be almost perpetual: the pain itself consumes their strength; whence death quickly follows. Daily observations shew, that from this cause alone, many children perish at their entrance into life.

Hippocrates ^a has enumerated vomitings, coughs, watchings, and terrors, amongst the disorders of new-

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born

^a Aphor. 24, sect. iii. Charter. Tom. IX. p. 119.

born infants. But that the irritating of one of the great guts may occasion a cough, we learn from a very extraordinary observation of the celebrated Albinus^b, concerning a soldier, in whom the gut colon being wounded, was cured in such a manner, that the tract of the belly and the intestine had one scar through the whole circuit of its border: whence the internal surface of the intestine not only appeared to the eyes, but being inverted was sometimes thrust out. If a coolish air came to the internal surface of the intestine, there immediately followed a cough; which did not cease, till the intestine again grew warm.

§. 1346. **T**HE expelling force, when languid, is increased by a gentle stimulating purge, a mild suppository, and by a very grateful and gentle cordial.

The expelling force is known to be languid, if the child makes no efforts towards an evacuation by stool, or very weak ones only. It is obvious enough, that there is then occasion for a gentle stimulating purge: rhubarb, and all the preparations of it which are made in the shops, are alone sufficient: for the tender body of the new-born infant cannot bear the sharper stimulation of purging draughts, without danger of convulsions: “The syrup of succory with rhubarb, syrup of roses, a simple solution of manna, the pith of cassia fistula,” are the chief remedies used by physicians in this case. Several such prescriptions are to be met with in the *Materia Medica* at this article.

Suppositories are used for the same purpose; which either by their bulk, or the addition of a gentle stimulating quality, slightly irritate the extremity of the *intestinum rectum*; whence the *tenesmus* arises, and thus the retained excrements are voided. The tallow of candles, formed into a globe or little cone, acts by its bulk: little globes of sugar, which are usually prepared of the seed of fennel covered over with sugar, besides their bulk, have the gentle stimulating quality

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of sugar, melting insensibly, which is still more efficacious in suppositories that are made of boiled honey or Venetian soap; concerning which, see the *Materia Medica* at this article.

Of whatever ingredients these suppositories are composed, they are anointed with oil, that, being slippery, they may be pushed up the anus without any force. They are left in till they come out with the excrements, which generally happens speedily enough. If they stay in longer, they are dissolved by degrees; and if they have any thing of a stimulating nature at the same time, the effort to evacuate by stool is excited by this, if this effect should not be produced by the bulk of the suppository alone.

Agreeable cordials are recommended in case the child should be weak; these, by a gentle, stimulating quality, rouse the suspended actions of the stomach and intestines. Prescriptions of these are to be met with in the *Materia Medica*.

All the excrements are known to have come out, if what is voided by stool changes its colour: for it is then, generally speaking, yellow, or of a colour between white and yellow; and, if it is left upon the sheets, frequently assumes a green hue in the space of a few hours. Sometimes, likewise, a green bilious matter, is voided by stool after the excrements have come out: for *Monro* has admirably remarked^a, that the gall-bladder in new-born children generally swells with sour green bile; because, through the difficulty of breathing, and the glue which smears the sides of the intestines, it could not so easily run into the intestines. This is the reason why the gripes continue after the child's excrements are voided, on account of the quantity of bile passing through the intestines; which being evacuated, they are better: hence the use of such remedies is continued, till the soft, yellow excrements are voided without any pains being felt. For it is better, that, in young children, the belly should be relaxed, than too much bound. This is likewise confirmed by *Hippocrates*, where he says,

Thq̄sē

^a *Medicæ essays and observations*, Vol. II. art. 2. sect. 13. p. 243.

Those who have copious evacuations, and who digest well, enjoy the best state of health^b.

§. 1347. **T**HE hardness of the meconium is corrected by a draught of fresh whey, with a little honey dissolved in it, or by a whey-clyster with honey or soap.

The child's excrements are seldom hard; but rather their pitchy tenacity makes them come out by stool with difficulty: but if they stick too long, they may grow hard; yet the excrements, ready to corrupt too soon, an acrimony being occasioned by delay, will have worse consequences, as has been said at §. 1345.

That first mother's milk, which was before recommended, will easily remedy the too great hardness of the excrements, and at the same time will diminish their tenaciousness by its diluting force.

If the child should not suck its mother, a little of the serum of milk, sweetened with honey, is generally given it, (see the *Materia Medica* at this article :) this is easily taken by the new-born children. Clysters of the serum of milk, with a little honey and Venetian soap, are of great use; as the collected excrements stick chiefly in the great guts, and thus may be easily washed out. It will be sufficient if an ounce or half an ounce of such serum of milk be thrown in, and with but little force, lest the tender intestines should be injured thereby. For it is safer to repeat such a clyster, if there should be occasion, than to make use of too great a quantity at once.

§. 1348. **T**HE intestines are lubricated by giving linseed oil, oil of olives, sweet almonds, &c. and by injecting clysters of the same, and likewise by anointing the belly with soft liniments.

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^b Quibus copiose profuit alvus, ut belle concoquant, ille meliore sanitate fruuntur. *De dentitione*, n^o 4. *Charter. Tom. VII. p. 871.*

All expressed oils lubricate, are a remedy against the dryness of the intestines, anoint their sides, and weaken all acrimony of whatever sort by wrapping it up; for this reason, as it is well known, soft, fresh oils, taken as well from the vegetable as the animal class, are so much recommended when sharp poisons have been taken. Therefore, when the excrements become sour, and occasion gripes by irritating the intestines (§. 1345.) these may be of service. Care should however be taken not to give these in too great a quantity, or for a long time. For they diminish the strength of the solid parts (§. 35.); and if they continue a long time in the stomach and intestines, they grow stale, and occasion a very pernicious acrimony: even in strong and robust men, it is observed, that if at dinner they eat a great deal of fat meat, they in the evening belch up nothing but oil; but it is at that time so acrid, that it parches the jaws and gullet, and even almost chokes them up. This is the reason why there is only a small quantity of soft oils prescribed in the *Materia Medica* at this article; and that syrups are mixed with them, that, by the saponaceous virtue of sugar, that oil may be rendered capable of mixing with the aqueous humours, and so prevented from sticking a long time to the hollow surface of the intestines. For the same reason, the yolk of an egg and the mel mercuriale is added to the linseed oil when it is ordered in clysters; and at the same time advice is given, that such a clyster should be repeated every day, till the parts are properly lubricated. But this end being answered, it is best to discontinue them.

Anointing the body with soft ointments, has likewise been recommended; yet this cannot so directly conduce to lubricating the intestines.

Tissot has observed^a, that pressed oils given to newborn children have sometimes very speedily allayed the gripes; but that they soon after returned more frequently, if the use of oils was continued. He cured some, without administering any remedy, by forbidding the use of oil.

§. 1349. **B**Y this method, and by these medicines, all that variety of bad symptoms arising from a retention of the meconium (§. 1345.) are happily removed.

The primæ viæ are in new-born children every where stopped up with slimy dregs, which give rise to a great many disorders, as has been said: the great guts hold a quantity of tenacious excrements; which loads, distends, and, being made acrid by delay, irritates. But if these are brought out of the body, the stomach and intestines are cleansed, and become fit to receive, retain, and change such food as is requisite to nourish the new-born child, and make it grow. Whence it appears, that this method, and these remedies, are sufficient to overcome the disorders above enumerated.

§. 1350. **B**UT if alkaline remedies are useful in any disorders, they are particularly here, especially those of the absorbent kind.

As the breast is to a new-born child, or pap made of milk, meal, bread, &c. and all these degenerate from their own nature into an acrid acrimony; the reason is obvious, why alkalines are upon this occasion made choice of: and of them, chiefly those of an absorbing nature; because they effectually subdue the acid, but at the same time have no acrimony. See what has been said at §. 66. where spontaneous disorders, proceeding from an acid humour, were treated of.

§. 1351. **O**PIATES are rarely to be given, and then with the greatest caution.

There has obtained in many places, amongst the lower class of people, a pernicious custom of administering

nistering opiates, whilst infants testify the pain by piteous cries: in this manner, indeed, the sense of pain is deadened; but the cause which produces pain continues to act, and may destroy the tender body of the new-born child. If the intestines should be torn by the excrements retained, and become sour, their expulsion ought to be promoted, as has been said; if such disorders should be occasioned by an acid acrimony, that may be safely corrected by absorbing remedies. But as a relaxed belly is an advantage in this first stage of life, in order to evacuate the excrements, and drive out the bile, collected in too great a quantity, and sometimes grown acrid, opiates are pernicious, as they are of an astringent quality. Whence it is evident, that such remedies cannot have place upon this occasion; or if, during their continual cries, they should want something to give them ease, things of the mildest nature should be made use of. *Syr. fl. rhæados*, *syr. diacodii*, and things of this kind, which are to be met with in all the shops, diluted with water, and administered by sparing doses, and at several different times, till they produce soft repose, may be allowed: things of a stronger nature are always pernicious. Mercenary nurses, and those who attend children, frequently give them these things privately; and as they in a short time produce no effect except the dose be increased, they sometimes presumptuously go on to a considerable quantity; and the unhappy creatures are so used to these, that for a long time afterwards they cannot do without them; so that I have seen them live quite stupid and besotted to the third or fourth year of their age. However, in most of them these ills subsided as they grew up.

§. 1352. **B**UT we must also avoid all remedies that are too attenuating, stimulating, or volatile.

In the mother's uterus, the fetus lived upon the kindly humours of a mother in good health, and grew; and, as was said before, is hurt, if the pregnant woman

woman should indulge herself in the use of strong meat, liquors, or sauces. As soon as the child is born, the soft mother's milk is destined to its use. The tender bowels of new-born children can bear nothing of an acrid irritating nature; hence all wise physicians, when they treat childrens disorders, beware of these; which shews how much those women are in fault who endeavour to procure children sleep, by giving them warm opiate compositions. They pour treacle, mithridate, and other aromatic medicines down the throats of the little wretches, even against their will. In many places a composition is much used, which in the shops is called *Electuarium seu requies Nicolai*: "The electuary or repose of Nicolaus;" and from its effect, *Requies puerorum*, "The repose of children." That electuary, besides a pretty large quantity of opium, contains nutmeg, cinnamon, and ginger. Nay, I have seen them administer a hot electuary, called in the shops *Philonium Romanum*; which, besides a very considerable quantity of opium, contains pepper, and thei gneous root of Spanish pellitory: this composition is so warm, that it almost inflames the jaws whilst it is swallowed.

After the oily volatile salt of Sylvius had grown famous, it was almost looked upon as an universal remedy, as he derived the causes of almost all diseases from an acid. Besides, as there is so often an acid acrimony in the stomach and intestines of children, which produces many disorders; hence that sharp remedy, which consists of volatile alkaline salts, and the warmest aromatic oils, has been given to children. But if the steam of that remedy should affect the nostrils of a robust man in perfect health, almost his whole body is convulsed. How great reason, then, is there for fear, whilst such a steam, rendered more active by the warmth of the body, wanders over the stomach and intestines of a tender infant! This medicine indeed subdues the acid; and, being united with the acid, is converted into a neutral salt of a mild nature; but its sharp, stimulating quality, is pernicious, till this is effected.

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This is the reason why wise physicians have chosen rather to use absorbing remedies for subduing the acids which stay in the *primæ viæ* of childrens bodies, and why they have ever preferred them to fixed alkaline salts; though these stimulate less than volatile alkaline salts. For all those, if they do not meet with the acid, or even before they are united with it, may hurt by their own acrimony. But absorbing remedies are mild, and have no acrimony.

§. 1353. **B**UT a remedy is easily found for the disorders enumerated at §. 1345, provided we know the history and cure of all the diseases hitherto described.

All those disorders which have been enumerated at §. 1345. are generally happily removed, when the cause is removed; that is, whilst the excrements are forced out, and the stomach and intestines are disengaged from the tough glues. In the mean time, it may happen, that after a long stay of the excrements, now become acrid, the intestines may be injured, and therefore even after the expulsion of the excrements some of these bad symptoms may remain: for example, the intestines may be inflamed, and the stomach so irritated by continual vomiting, that qualms and a vomiting may continue. But then such a cure of all these disorders is necessary, as was determined upon before, whilst all these disorders were treated of; attention being always given to the tender age of the patient, which can bear only the gentlest remedies.

Hence, likewise, the reason is plain, why all things should be guarded against which may strongly and suddenly affect the organs in new-born children. Wherefore Moschion^a has wisely advised, that new-born children should lie in “a place moderately
“ warm, and not very lightsome, and free from any
“ stench.” Thus we imitate provident nature, which in new-born children has fortified the eye with a thin

membrane drawn over it^b, lest too strong a light should hurt it. The same caution is likewise observed with regard to the organ of hearing, partly by the membrane which closes it, partly because the passage of the hearing is extremely short, and is afterwards to be lengthened by degrees. So that the health of princes is but ill consulted, whilst they are exposed to general view in lightsome apartments, and great guns are fired within their hearing, &c. If I could not entirely alter this pernicious custom, yet it was in my power so to correct it, that it could scarce do any further hurt.

The soft body of a new-born child, and its bones, almost of the flexibility of wax, should be cautiously handled, lest there should be caused any deformity in the limbs, which it would be afterwards hard to correct. Yet the whole care of this matter is generally committed to women who bind the limbs with bandages, and manage them as they think proper; and treat the best advice of physicians and surgeons with contempt, which often gives occasion to great disorders in the unhappy children.

Moschion^c has cautiously directed, that new-born children should be laid in a bed not very soft, but moderately so; for he was apprehensive that the backbone or the neck might be distorted, if the clothes were too much pressed down by the weight of the body.

The fetus in the mother's uterus being immersed in the soft liquor of the amnion, could move all its limbs freely; but no sooner is it born, but it is so confined with bandage, that it is deprived of motion. It will not do any hurt to wrap the body and the limbs with a soft bandage not bound very tight, that the child may be handled by the nurses and attendants, carried from place to place, and brought close to the breasts. Moschion^d has said, with regard to the time the bandages should be used, that some have fixed it at forty days,

^b Albin. annotat. academ. lib. i. p. 33. citato.

^c In loco modo
^d Spach. Gynæc. p. 10. n^o 107, 108, et Harmon. Gynæc. parte i. cap. 21. p. 17.

days, others at sixty; but that his opinion was, that bandages are of service till the whole corporeal frame becomes firm, which happens more early in the robust, more slowly in the weak.

Therefore the chief, nay the only use of bandages, is, to defend the infant from the cold air, and to prevent its being hurt by a rude touch, as well as by the friction of parts against each other. For which reason, the limbs are wrapped round with soft linen, that all rubbing against them may be avoided. But the pernicious custom has too much obtained of keeping the limbs immoveable, and stretched out in length by bandages, and so forcing the wretched creatures to lie down in a posture, which would be insupportable even to robust men. It was before said, when the manner of lying down in disorders was treated of, that that posture is looked upon as the best, which is always chosen by persons in health whilst they sleep, who never sleep with their legs stretched out in length, but half bent, whilst with a silent, voluntary motion, during sleep, the flexor muscles prevail over the extending ones, and gently bend the joints. The foolish women that attend children, do their utmost to prevent the bending of the joints, stretch the arms and elbows straight out, bind them strongly with a bandage, bring them near the sides of the body, and pull them backwards; they manage the lower limbs in the same manner, by hindering all bending of the knees: thus they, with great boasting, shew the unhappy child, wrapt up with bandages like a mummy, and motionless, to its mother and all present.

The women themselves are surprised, that the child, who cries in a piteous manner whilst wrapt up in the bandages, is immediately quiet as soon as it has free liberty to move its limbs upon the loosening of these chains. But I could not, even by the evidence of this experiment, prevail upon some of the more obstinate among them to let the childrens limbs be more at liberty. On the first six weeks after birth, I constantly attended the offspring of princes twice a day, whilst the bandages were applied; and if I did

not plainly perceive that all the limbs could be easily moved, I immediately caused the whole apparatus of bandages to be removed, tho' the women, who are to be over-ruled not by advice but authority, murmured ever so loudly. At the same time, I took care to inculcate it into the midwives, who, according to custom, apply the first bandages to new-born children, not to bind their limbs too strongly. Thus I at last made some of them grow wise.

There does not appear to be any reason for apprehending ill consequences from the looseness of the bandages; the fetus floats freely in its mother's womb; it moves its limbs with force, and kicks. There are whole nations that never use any bandages, but only defend the children from the inclemency of the air by a slight covering. The Europeans, notwithstanding, are surprised at the strength and agility of these men^c; and there is seldom any personal deformity observed in them.

Particular care should be taken not to press the head hard in new-born children; for nothing is more dangerous. We meet with an excellent advice to this purpose, "The head should be covered with linen or clean woollen f." Whilst, in the same chapter, the bandages which are to be wrapt round the rest of the body are treated of, no mention is made of any ligature of the head: and indeed with good reason; as the bones of the head are soft, only united to each other by membranes, so that, an external pressure intervening, they can easily mount above each other, and so compress the brain, the cavity of the skull being diminished. A soft cap, put loosely upon the head, is sufficient. In those who have lived in a state of idiotism from their birth, the shape of the skull is generally found to be irregular.

Besides, the hard binding of the bandages is hurtful, as it obstructs the free motion of the thorax necessary for respiration, and presses the last spurious ribs

^c Hist. Nat. gener. et particul. avec la descript. du cabinet du roy, Tom. II. p. 457.

^f Spach. Harmon. Gynæc. part. I. cap. 21.

ribs inwards; whence many ill consequences may follow. Whilst at the same time the abdominal viscera are compressed from the same cause, the stomach can neither receive a proper quantity of milk, nor retain it when received: whence there usually follow a frequent pouring back of the milk, and a troublesome vomiting, as Mauriceau has admirably observed ^g.

But as the fetus, hanging in the mother's uterus from the navel-string, is easily shook this way and that, whilst the mother moves her body; hence it has been not without reason believed, that new-born children delight in such an oscillatory motion, as it were; for which reason they laid children upon cradles, that they might enjoy this gentle exercise, and be more and more strengthened. Daily experience teaches us, that the worst tempered children are soothed by this gentle motion, and at last sink into a sweet sleep. But it is requisite that that shaking of the cradle should be gentle and equable. For which reason, Moschion has said; "Let the cradles either hang by
" cords, or have their feet and sides so contrived a-
" bove and below as to be easily moved to either
" side ^h." The cradles that hang by cords are the best of all, as they may by a slight force be moved equably and without any noise. At the same time, the motion communicated to these cradles is imperceptibly diminished, and at last ceases without any concussion.

§. 1354. **I**NFANTS also suffer a great deal from the milk itself, when it is too soon and strongly coagulated in the stomach, and compressed into one heavy and acrid mass.

As soon as a child is born, the navel-string being cut, all the connection which it before had with the mother, is removed: but after a fast of a few hours,

A a 3 that

^g Traite de malad. des femm. gross. Tom. I. liv. 3. chap. 37. p. 506.

^h Spach. Gynæc. p. 9. n^o 104.

that the *primæ viæ* may be the better cleansed, as was said, there is occasion for food; and that this might be ready, provident nature has prepared a thin, serous, cleansing milk, in the mother's breasts. Nothing can therefore be more natural, or more beneficial for the child, than that it should be nourished with the milk of its own mother. In the uterus, it had its nourishment and growth from the mother's humours; nay, it seems very probable, that in the last months of pregnancy, as was said before, the milk was carried to the uterus and the fetus. If in grown men, and men in health, a sudden change in the manner of living is not without danger; it is evident, that there is great reason to fear, lest a new-born child should be hurt by an improper nourishment, and decline in health. But as breasts were given not only to women, but to four-footed beasts, in so much the greater number, as they are used to bear a greater number of young, that all may have their food ready as soon as they are born; it appears evidently to be the design of nature, that new-born children should be nourished by their mother's milk, till, their bodily strength increasing, and their teeth being grown, they may be able to take more substantial food, which may require a greater effort of digestion, and convert it to their own use. But a wise physician will never depart from the law of nature, but for great and weighty reasons.

It is true, indeed, that the milk grows sour of its own accord, is coagulated in the stomach, becomes still sourer by delay, and that many disorders take their rise from thence, of which we are now to treat; for this reason, some seem to have looked upon milk as an unfit nourishment, and have recommended some other sort of food, for new-born children. But if the strength of the viscera, that make the chyle, be so languid, that they should not be able to digest the milk already prepared and subdued in the mother's body, can it be hoped that other food can be digested, which varies more from the nature of healthy humours than the milk itself? this certainly seems by no means probable. The milk, before it is gathered in the breasts, has

has undergone the action of all the vessels and viscera of the human body, as it run through the vessels; nay, now makes a near approach to the nature of human humours. No art can cause such a previous change in the food which is given to children, as is effected in the milk by nature. It is justly inferred from hence, that milk is the properest nourishment for infants. For those disorders which are observed to arise from the milk's not being well digested, may be guarded against; and if they should take place, it is not hard to correct them, as will appear from what follows.

Helmontius^a, though he condemned the use of milk, and enumerated many ills which spring from it, said notwithstanding, "Nature intended the milk in the breasts for the meat and drink of the infant, which food has fallen to its lot in common with the brutes." But he for that reason seems to have set the less value upon milk: "Nature is governed by the finger of God. This is so. It has therefore given a sufficient quantity of milk as ordinary food for the preservation of life; but not to serve for protracting life. For nature no longer was solicitous about long life, when she knew her Author had shortened life, and did not chuse that every one should live to a great age. For she gave every one equally milk as his food; and also a multitude of diseases, that many fore-runners of death should at life's foundations tend to ruin. Nature therefore by the milk fulfils the purposes of its Author, and has given a brute's food." But as he indulged visionary notions about protracting life by his medicines, he required people to take, "twice every day, four drops of the tree of life." For this reason, likewise, he condemns milk; "because his medicine, as from the cradle it is given drop by drop, in order to produce long and healthy life, cannot be digested, nor even penetrate, if it be buried amongst the thick lumps of milk: inasmuch as, in this manner, poisons become innocent, and, being rendered weak, prove of no effect."

But

^a In capitulo, *Infantis nutritio ad vitam longam*, p. 622, et seq.

But what food has he substituted in the place of milk, which he has condemned? “ For a child, I recommend such aliments as are made of bread boiled in a little mild beer, with clarified honey, or else with sugar, till they turn into a sort of jelly.” It is well known however, that bread boiled with beer soon grows sour, and that to a great degree; indeed no one who understands the functions of the body, will prefer such thick pap, to milk which is sucked from the breasts.

Hence it is observed, that but few follow the paradoxical opinion of Helmontius, who entirely condemned all milk, as well that of human creatures, as of other animals. Wise men, with reason enough, laugh at the chemists idle stories about protracting life; nor will they debar new-born children the use of milk, lest, by its softness, the efficacy of the *Ens Cedrinum*, *Arbor Vitæ*, &c. should be impaired.

Other excellent men, for whom I have a great veneration, have thought better of the milk, and have acknowledged its utility; but they preferred the milk of other animals to human milk, and they endeavour to support their opinion by specious arguments.

They indeed acknowledge, that sacred and profane history testify, that queens and women of the first quality gave suck to their own children^b. Nay, they declare, that it would be an impiety not to obey this natural law. But these early ages were recommended by their innocence, and daughters imbibed virtuous principles with their mother’s milk. In this our age, vices prevail, and children suck in the seeds of crimes and diseases with their mother’s milk. One author therefore wishes^c, that princes would interpose their authority to prevent mothers from giving suck to their children. Physicians should never cease to be earnest in their exhortations, whilst they with patience wait for such happy times.

In my opinion, we should think more favourably

^b Vander monde sur la Maniere de perfectionner l’espece humaine, Tom. II. chap. 5.
^c Brouzet sur l’educat. medic. des enfans, Tom. I. chap. 5. p. 165.

bly of the present age: let vices abound ever so much, there are not wanting examples of virtue. The crime of parricide stained the early infancy of the world: fifteen ages being elapsed since the creation, vices had increased to such a degree, that the divine wrath, flow to vengeance, destroyed the whole race by the waters of the deluge, none being preserved but Noah, a just and perfect man, with his family. These first ages were doubtless worse than ours: *For all flesh had corrupted his way upon the earth*^k.

Nor can I easily be induced to believe that the milk has any influence upon the manners of men. I am not however ignorant that many stories have been told upon this subject. What a diversity of manners was there in the brothers Cain and Abel! yet they were born of the same parents, and sucked the same breasts. Who can believe, that the ferocious Cain sucked anger, envy, and cruelty, with his milk from the breasts of the mother of human race? Daily observations show, that brothers born of the same parents, and nourished with the same milk, have been very different in their moral character. If it be true (which I however call in question) that in Muscovy and Iceland^l, mothers never give their children suck; does it appear that vice prevails less there than elsewhere? The heifer, that grows up to be a fierce bull, sucked milk of the same mild nature with his sister-cows. When scrupulous parents would have turned off a nurse who was in perfect health, only because she seemed to be somewhat dull; an old physician said, laughing, that the nurse must doubtless have better intellects than a cow, with whose milk they proposed to nourish their child. How little influence the milk has upon the morals, an excellent author proves by his own example^m. For he acknowledges, that he was for eighteen months fed with the milk of a drunken nurse, without his health or strength being any way impaired. Nor does the excellent treatise
which

^k Genes. chap. vi.
chap. 5. p. 160.
notis.

^l Brouzet sur l'éducation med.
^m Brouzet sur l'éducation medic. p. 175, in

which he wrote concerning the medical education of children, discover any traces of this vice.

Ought not those who condemn human milk, as the cause both of mental and corporeal diseases, be apprehensive of the stupidity of the ass, or falaciousness and restless motion of the body, when asses or goats milk is made use of in bringing up children ⁿ.

If the milk of animals is of service in curing the most dangerous diseases, human milk would prove much more beneficial. See what has been said at §. 28, n^o 1.; as likewise what has been said at §. 1211. concerning the cure of a consumption. It was there observed, that the warm milk strained out of the breasts, whilst it is exposed to the air, sends forth a steam of a tolerably agreeable smell, which is immediately diffused into the air, and is, not without reason, thought to proceed from the most subtle and elaborate fluid prepared in the mother's body. All that quickly vanishes, whilst the milk is exposed to the air; wherefore nature has providentially caused the milk to pass immediately into the stomach of the child, without any loss of that subtle vapour.

Another argument which has been alleged against giving suck to children, is, That women who give suck, are less fruitful; and according to this opinion, the number of the human species would be increased, if the custom of giving suck was entirely abolished. A celebrated author has maintained ^o, that two thirds of the time, during which women are capable of child-bearing, is entirely lost, whilst they nurse children. But this opinion seems to be repugnant to authentic and daily observations. I have known many women, who have almost every year been happily delivered, though they nursed children. I knew a noble matron, who had born eighteen children; gave suck to them all; and, when she rose the last time from childbed, had lost nothing of her beauty, but seemed rather to be the sister than the mother of her daughters. I observe in Austria a great fruitfulness amongst the women,

ⁿ Vander Monde sur la perfect. de l'espece humaine, chap. 5. p. 88.

^o Brouzet sur l'educat. medic. Tom. I. chap. 5. p. 164.

men, even amongst the lower sort, who are not able to be at the expence of a nurse, and who think it much easier to give suck to their children than to prepare any other sort of food at an unseasonable time of night. I have heard many complain that they had born children but six or eight times, being firmly persuaded that something noxious left the body at every delivery; and if this did not happen, they were apprehensive of soon growing diseased. It is therefore evident, that fruitfulness is not obstructed by giving suck; and I every day see the number of women who give suck, happily increased.

I always represented, and was never sorry for giving such advice, "That a woman ought to be the entire mother of her child: how contrary to nature is this imperfect sort of mother, this mother by halves, who brings forth, and then casts off, her offspring? who after having nourished in her womb, and with her blood, something which she did not see, does not now nourish with her milk what she sees living, become a human creature, and imploring the assistance of its mother. Do you then, says he, imagine, that nature gave women breasts, like a sort of beautiful excrescences, to adorn their chest, and not to nourish children? thus most of those unnatural women endeavour, which you avoid, to dry up and quench that most sacred fountain of the body, with the hazard of turning the milk out of its course, and corrupting it, as though it spoiled their beauty, ^{p 266.}" A queen of France gave her son suck, nor would she desist from so doing when taken ill. And as, during the time of a fit of an intermitting fever, another matron gave her breast to the thirsty and crying child, she was so much displeased at this, that she thrust her finger into the child's mouth in order to excite a vomiting, being unwilling that another should perform any part of the mother's office ^q.

But if a mother should not be able to give her child
suck,

^p Aulii Gellii Noct. Attic. lib. xii. cap. 1. p. 281.
^{loco modo citato}, p. 166.

^q Brozet, in

suck, on account of a disease, weakness, or any other cause, or should be unwilling to do it, then the best way is to chuse a nurse for the purpose. The first requisite in a nurse, is perfect health; for this reason, the physicians carefully inquire whether any disease can be discovered in them. If the colour of the skin be good, the eyes lively, the gums of a good colour and firm, the teeth shining and well conditioned, the skin every where unblemished; if no ill smell exhales from the mouth, nostrils, or skin; then we may be certain of perfect health. At the same time, the child to whom she gives suck, is examined, whether it be in health, or has acquired its due growth: for from thence a judgment is formed concerning the good effects of the milk. A prudent and experienced midwife examines all things with care; and if there be found a suspicious scar, pimples, or an evacuation of corrupt humours from the uterus or pores, the nurse is justly rejected.

From the twenty-fifth to the thirtieth year, is considered as the best age for a nurse. But I have known nurses of twenty years of age, who were very robust, in perfect health, and who acquitted themselves in this office with great success. The prudence of nurses of a more advanced age has been commended, and perhaps this circumstance ought to be taken into consideration: but nurses do no more than give suck to the children of kings, all other cares are left to women of approved fidelity: amongst private persons, if a nurse is at the same time to take care of the child, such as have born several children are, *cæteris paribus*, preferred to those who have born but one, provided they be in the prime of life.

The form of the breasts is approved of when they are not flaccid, but tight, elastic, and of a moderate bulk. Aëtius^r was apprehensive, lest too great a quantity of milk should be gathered in large breasts, which being corrupted by stagnating would prove hurtful to the child. But it was before remarked, in treating of the diseases of childbed, that besides the

appa-

^r Lib. iv. cap. 4. p. 67, versa.

apparatus designed for separating and gathering the milk, there was in the breasts the tunica adiposa, which, if it be much distended with fat, increases the bulk of the breasts, but does not promote the secretion of the milk; on the contrary, rather obstructs it, whilst it compresses the glandular part of the breast with its bulk. I have often known such great breasts afford but little milk.

The nipples are commended for their red colour, their firmness, and for their rising sufficiently above the disk of the breasts, so that the child may be able to catch them with ease. It is likewise requisite that they should be of a moderate size: for if they should be too big, they would obstruct the motion of the tongue required for deglutition; and if they should be too small, the child would find it more difficult to hold them in its mouth, and whilst it attempted to suck, they would easily slip away^s. It is best of all, that upon a slight compression of the breast, especially about the circle of the nipple, the milk should spurt out easily, and to a great distance, as it were out of a great number of little cocks. But if these cocks should be rather broad, so as to let out the thick milk, as it were through a pipe, Aëtius thought there was danger of suffocation^t. The age of a nurse he has fixed, so that she should neither be under twenty, nor above forty years old.

It was customary for the nurse not to give suck to the child till four, or even six weeks after delivery; that her lochia might be thoroughly purged off, and that she might be perfectly recovered from the fatigue of child-bearing. Mauriceau^u acknowledges, that he prefers the milk of the mother herself, and that therefore he rather wishes that the nurse should begin to give the child suck twelve or fifteen days after delivery. But it is obvious enough, that such an one cannot always be had. For which reason, Ægineta^v said, that it is a great advantage for the child, if the

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nurse

^s Lib. iv. cap. 4. p. 67, versâ.^t Ibid.^u Traite

des malad. des femm. gross. &c. Tom. I. liv. 3. chap. 43. p. 526.

^v Lib. i. cap. 2. p. 2.

nurse has been delivered a short time before ; and that more especially if her child should be male. I was little solicitous about the sex of the child, provided the nurse was in other respects unexceptionable. Some have been of opinion, that for a boy, a nurse should be chosen who had born a male child, but the reverse should be observed with regard to a child of the other sex.

The milk is known to be good, if it diffuses an agreeable odour ; if it be white, and of a taste sweet like that of sugar ; if, when mixed with fair water, it is diluted in a most equable manner. Its consistence is praised, when a drop, being put upon the nail, does not immediately run quite off upon the finger's being bent, but some part of it remains upon the surface of the nail : but if it sticks too much to the nail, it is condemned as thick and viscid. It is at the same time praised, if it is not entirely white, but has something of a bluish hue, as if it were partly pellucid.

But authors have prudently advised^w to chuse a discreet nurse, not prone to anger ; to which Aetius has added, *non epileptica*, not troubled with the falling-sickness. It was said before, in treating of the falling-sickness, that there are sometimes long fits between the intervals of this dreadful disorder, and that in this intermediate time no symptom of the hidden disorder can be discovered : besides, women who are liable to be agitated by violent passions, are often troubled with hysteric complaints. It is obvious, that such nurses should be rejected ; for authentic observations have shewn, that children who have sucked the breasts of nurses, whilst in a violent passion, have been on a sudden convulsed. Nor will this seem extraordinary, if what has been said at §. 104, and in other places, concerning the surprising changes which are occasioned in the human body by violent and sudden passions, be taken into consideration.

For this reason, several nurses are wisely chosen in courts : these live in the same house, under the protection

^w Aetius, lib. iv. cap. 4. p. 67, versa. Moschion apud Spach. p. 7. n^o 76.

tection of a discreet matron; all use the same diet, every day converse with each other, and at the same time give suck to their own offspring, and take care of it. Thus an opportunity is afforded of detecting their defects, both of body and mind, which have escaped notice before. Wherefore Aëtius^x said: "It is best for the rich to have several nurses."

But as it is evident from authentic observations, that the milk separated and gathered in the breasts, has not totally divested itself of the nature of meats and drinks; the reason is obvious, why a choice should be had in the regimen. Wherefore Aëtius has wisely advised^y to give, at a proper time, food of a good juice, in a proper quantity: he directed to abstain from leeks, onions, garlick, salted meats, from things of an ill flavour and bad smell, from too great a quantity of conserves, &c.

Nor yet should the food which the nurse was accustomed to be changed all at once, as she lived in health whilst she used it before. Hence Moschion^z has wisely observed, with regard to the diet of nurses, that they should be fed "in the ordinary way, like other people, in order to be healthy." Solicitous mothers often transgress this precept, whilst they set before nurses dishes prepared with all the refinement of the art of cookery; and press them, when cloyed, to taste the dainties at least; thinking they consult the good of their offspring, whilst they load the stomach of the nurse. Plenty of food is indeed beneficial for nurses, if their appetite is capable of it, that a proper quantity of milk may be never wanting. But a simple diet is best of all, consisting of broths, and the flesh of young animals either roasted or boiled: vegetables are likewise of service; ripe fruits, not acid; fresh eggs, white food made of milk: rich, fat meat, sour things, things salt and aromatic, are to be avoided: For thus, from the food above-mentioned, a quantity of good and benign chyle will be prepared in the body of a healthy nurse; which will be abundant.

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^x Aëtius, lib. iv. cap. 5.
Gynæc. p. 7. n^o 77.

^y Ibid. cap. 6.

^z Spach.

dantly sufficient to support both the nurse and the child. At the same time, a considerable variety of dishes may be prepared out of these ingredients, lest the same, repeated every day, should disgust.

Whilst the new-born child begins to suck, it is recommended to nurses to use a more liquid nourishment, by increasing the quantity of broth, and diminishing the quantity of flesh; if the keen appetite of the nurse requires stronger food, a quantity of thin drink may better dilute the chyle.

However, as the strength of the child increases by slow degrees, stronger meat may be allowed the nurses ^a.

The drink chiefly recommended is fair water, as all other drinks prepared by art, such as beer, wine, and the like, are either acid already, or grow acid of their own accord; and in children, an acid acrimony is dangerous. Moschion ^b, on the first days, allows nothing but water; afterwards, as the child grows up, he allows wine to be mixed with the nurse's ordinary drink. But some allowances should be made on account of the country and custom: it is well known, that, in some countries, water is either never, or very seldom drunk. If, for example, the nurse has been used to drink beer, she will not be able to bear water, but will decline in health. I never knew beer hurtful to those who were used to it, provided it was mild, fresh, and clear from dregs; above all, unmixed, as it then does not easily grow sour, and is very nourishing. Aëtius ^c, when the nurse's milk begins to fail, directs that she should drink beer or ale; and says, "The same day the breasts will be filled with milk. But the woman, when she has taken a cup, will seem to languish, and be relaxed in all her limbs, till the milk is gathered in her breasts." But such unmixed beer should not by fermentation have acquired the power of intoxicating; for then it affects the head very much. I have found such beer have an excellent effect upon many nurses; and indeed upon my own wife, who

^a Moschion, apud Spach. p. 7. n^o 77. cap. 6. p. 67, versa.

^b Ibid.

^c Lib. iv.

who when she gave her children suck, and was for going to bed, took a pint of this beer, which caused her breasts to be full of milk the whole night.

But as nurses use a plentiful diet, if they were to lead a life of sloth and ease, their health would be soon impaired; wherefore all physicians have advised them to use frequent bodily exercise. They have chiefly recommended those exercises by which the upper parts of the body are most agitated^d. For this reason, they have ordered them to busy themselves in kneading meal, in making beds, and in carrying water. Walking in an open, pure, and serene air, is highly beneficial. The nurse's mind being at ease and cheerful, contributes much to the preservation of her health.

The flowing of the nurse's menses, generally gives rise to great apprehensions; nay, it is customary with some to substitute a new one in her place upon such an occasion. For many ill effects have been ascribed to the monthly evacuations; as was said in the chapter upon the Diseases of Virgins. Aëtius has declared against giving to nurses "a great quantity of preserved fruits, and above all of pine-apples; for these, as they are oleaginous, generate bile, and float on the stomach; but they moreover excite concupiscence, which a nurse should be entirely exempt from: for at the time of coition, the menses are excited; whence the milk is corrupted, and is generated very scanty and ill-conditioned^e." Moschion delivers himself to the same purpose^f. When nurses are chosen, the question is generally asked, whether they ever had their monthly evacuations at the time when they gave suck? If they own it, it is thought that such nurses are not the most proper. I have known six nurses changed in the space of a year upon this account alone. In such a case, I carefully examine the nurse and her milk. If I find no alteration in her health, if the quantity and quality of her milk is unexceptionable in every respect, no nurse was ever changed by my advice. It should

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^d Aëtius, in loco modo citato. Moschion, p. 7. n^o 77, 79.

^e Ibid.

^f In loco modo citato.

be observed at the same time, that poor nurses, when they perceive their monthly evacuations beginning, are uneasy in their minds, being apprehensive of being turned off. But when, being encouraged by kind words, they conceive hopes that what they dread will not come to pass, their terrors are hushed, and their former alacrity returns. I can safely assert, that I never, upon the above-mentioned conditions, knew any ill consequence arise from childrens sucking the breasts of a nurse during the time of her monthly evacuations. There seems to be more reason for apprehending danger from a frequent change of nurses.

It is indeed customary in courts, to keep nurses from cohabiting with their husbands: and Aëtius^g expressly forbids their lying with a man, both on account of their menses, from which he apprehended danger; and because “some of them conceive, than which nothing can be worse for the child who is brought up by them.” However, daily observations shew, that women who give suck to their own children, have an unconstrained commerce with their husbands, and yet bring up their offspring happily; and that many of them conceive at the time of their giving suck. Is it not rather to be feared, that a woman, who, in the flower of her age, lives high and elegantly, should have a secret commerce with a man, or that she should languish and decline in health, if rigidly watched. I have sometimes known this happen. This is the reason why a moderate indulgence of lawful love is not thought hurtful to the nurse or to the child^h. It is true indeed, that women are to be met with, who are not by constitution very prone to venery; whose constitution is then generally frigid and unsusceptible: but such women are chosen for nurses as are in perfect health and full of juice, and in them the constitution is quite different.

Nor does there appear to be any such great reason for fear, if they should conceive at the time when they give suck: this happens pretty frequently to women.

^g Ibid.
et seq.

^h Brouzet educat. medic. Tom. I. chap. 5. p. 205.

men who nurse their own children: but as their menses often do not flow whilst they give them suck, it frequently happens that such become pregnant unknown to themselves. Nay, in many, the milk continues to be equally good and copious in the first months of pregnancy. It generally happens, that, the uterus being increased in bulk, the quantity of milk in the breasts is diminished; nay, even vanishes spontaneously: but the child having, at least for some months, made use of its mother's milk, will more easily bear being weaned. It is generally thought to be hurtful to the newly conceived embryo, for the pregnant woman to give suck to a child: but it is of so inconsiderable a bulk, that it can easily find nourishment in the uterus, though a great quantity of milk should be every day carried to the breasts. If a woman can nourish two, nay more fetuses, in her uterus, why can she not at the same time nourish one fetus in the uterus, and a child just born?

I knew a woman who, perceiving the pangs of delivery begin, gave suck to the child she had had that year; and, laughing, advised it to bid adieu to the breasts, which were, even then, devoted to the child who was upon the point of coming into the world. When I expressed my surprise at this, she said she had done so six times before. A few hours afterwards, she was delivered of a strong and healthy child, whom she happily brought up.

It does not seem improper to treat in this place of those impediments, which either entirely prevent the child's sucking, or make it suck with difficulty; and to consider, at the same time, by what method these obstacles may be removed or corrected.

It is well known, that the mouth and the lips are chiefly employed in suction; wherefore it is requisite that these parts should be entire, and should move with freedom. Amongst the ligaments which strengthen the tongue, and keep it in its proper situation, the chief is that which is inserted in the foremost and lower part of the tongue, which is commonly called the *frænum*. If, upon the mouth's being opened, the
tip

tip of the tongue should be raised up, it immediately appears to the eyes: it is a continuation and doubling of the membrane which clothes the lower cavity of the mouth, loosely sticking to it. This ligament prevents the tongue from being too much drawn back towards the jaws: but it is observed, that the extremity of it comes nearer to the extremity of the tip of the tongue in children newly born, than in grown persons; nay, that it sometimes, though rarely, is lengthened out as far as the extremity of that tip, and that it then prevents the tongue from being raised to the roof of the palate, or from being brought to the extremities of the lips. Thus the free motion of the tongue, requisite for suction, is obstructed. In such a case, the fore-part of the ligament is separated from the tip of the tongue by a slight cut, made by a prudent hand.

A very pernicious custom has obtained, amongst midwives who affect knowledge, of tearing this with the nails, and cutting it with scissars; doubtless, in the belief that this is necessary to easy suction; nay, that, in grown persons, speech would never be free, if that membrane was not cut. This has given rise to the proverbial expression concerning babblers: "That the
" bridle of their tongues was too much cut."

It is obvious, that the first thing to be inquired into, is, Whether there be occasion for that cutting or not; which is tried in this manner. If the child can bring its tongue as far as the extremities of the lips; if it can touch the palate with the tip of its tongue; if by sucking it can take hold of a finger that is put into its mouth; then there is no occasion for this cutting, as the tongue has the volubility requisite for all those purposes which are to be fulfilled at that stage of life, namely, suction and deglutition. The celebrated Petit, in whose praise we have so often spoken already, if he had any doubt concerning the necessity of cutting the frænum, caused the child to be brought to its nurse's breasts; and if it could suck, he did not cut it; though he himself thought that the
motion

motion of the tongue was by that impediment rendered less free. For he chose rather to defer the operation till the child was grown, because it may then be more easily attempted; and he has often observed, that that defect is insensibly corrected by time, so that they speak with the greatest ease imaginable; though all are for having the frænum cut immediately after birth. Besides, as it is somewhat difficult to perform this operation upon new-born children, in such a manner that the cut shall be neither too big nor too little, it is justly deferred upon this account, except an impossibility of sucking should make it necessary. For Petit^k has known cases, in which it was necessary to perform the operation a second time upon a grown person, in order to remove the impediment in the speech, as the first operation had not set the tongue entirely at liberty. On the other hand, if the cut be too long, the fore-part of the tongue is not sufficiently supported.

Observing a child stammer, he was of opinion that this was owing to the frænum's being cut rashly, and without any necessity. He acknowledges, that one half of the children to whom he was called, had no occasion for this operation, and that he had not attempted it on all the children in whom the motion of the tongue was obstructed by this impediment.

On each side of this frænum of the tongue, there lie ranine, arterial, and venous vessels, which may be easily hurt by an unskilful hand; especially the venous vessels which are placed before the arteries: but whilst a new-born child attempts to suck almost continually, the hæmorrhage is hereby increased, and it dies sucking its own blood. Such an unhappy case is described in Dionis^l, of a new-born heir to a rich family, in cutting whose frænum, the surgeon, unknown to himself, hurted a ranine vein. As he saw the child suck the breasts with ease, he went off unconcerned. The nurse laid the child, who was, as she thought, satiated with milk, in the cradle; it continued to move its lips, just as if it sucked, which is common enough with children; so that no body apprehended

^k Ibid. p. 339.

^l Andry Orthopedic, Tom. II. p. 266.

prehended any ill consequence from thence : but it began to turn pale, to grow weak, and died shortly after. When the body was opened, the stomach was found full of blood. Many similar cases occur in medical history.

It appears from hence that a careful hand is required to perform this operation with safety. Such a hæmorrhage, though it always frightens people, and unfortunate cases have shewn that it is not without danger, may however be suppressed by art, if the surgeon be not wanting in skill and dexterity, and if he be resolute. Petit ^m declares, that no child to whom he had ever been called died of such an hæmorrhage. In grown persons, as is well known, the ranine veins may with safety be pricked with a lancet : but they keep their tongues unmoved as they are directed ; and the blood is quickly stopped by cold water, or a bit of ice put under the tongue. But children constantly suck whilst the blood runs out ; and thus the hæmorrhage not only continues, but is increased. The chief remedy in this case, is to keep the tongue motionless, and prevent suction. Petit ⁿ took a little fork made of a bough of soft wood, in that place where too little branches of an equal length, as nearly as possible, form a fork ; he made use of it for this purpose. But he took care that the trunk should be four lines in length, and each of the little branches eight lines ; thus he made a little fork, whose handle was shorter by one half than its teeth : a thin linen cloth wrapped up this whole machine, which he put under the tongue of the child in such a manner, that the extremity of the handle touched and leaned upon the lower jaw ; but that the angle, formed by the diverging teeth of this fork, was applied to the open vessels, whilst at the same time the teeth on both sides prevent the motion of the tongue : he then applied a swathe of thin linen, an ell long, and eight or ten lines broad, to the tongue, so that it might touch both corners of the lips ; he then brought it under the jaw, divided it near the wind-pipe, and fixed each extremity

^m In loco modo citato, p. 353.

ⁿ Ibid. p. 356.

extremity of the swathe to the back part of the flat. Thus the tongue was secured, and the injured vessels were compressed. By this method the child was preserved, tho' the hæmorrhage had lasted for four and twenty hours, and it was very weak °.

That excellent artist admirably observes, that an hæmorrhage may follow, tho' the operation has been performed ever so dexterously, and though none of the trypine vessels have been hurt. For he saw such a case, when the limit of the cut was above two lines distant from the ranine vessels, and yet a considerable quantity of blood run out. This may happen, if the greater branches of these vessels should pass through the fold of the frænum: which then chiefly happens when it is more thick than usual.

But another danger impends, if the frænum of the tongue should be cut without reason, or too long a cut should be made. The little blood which always flows from the injured vessels, provokes the child to swallow: and thus the tongue, as the frænum which was cut does not strengthen and retain it, is drawn towards the hind parts; its tip is brought behind the pendulous veil of the palate; the basis of the tongue, being conducted backward, depresses the epiglottis, stops up the chink of the glottis, and the child is soon suffocated. Such a melancholy case fell under the observation of Petit P. The frænum of a child was cut immediately after its birth, and in the space of five hours it was suffocated and died: being called upon to examine into the cause of this sudden death, he could not find the child's tongue upon thrusting his finger into its mouth; but he touched a sort of fleshy mass, which stopped up the passage from the mouth into the jaws. Having cut both cheeks as far as the muscles of the lower jaw, he perceived that that fleshy mass was the tongue, so dragged behind the uvula, that the tip of the tongue looked towards the wind-pipe. Hence it appeared evidently, that the unhappy child had swallowed its own tongue.

Afterwards, whilst this case was fresh in his memory,

° Ibid. p. 353.

P Ibid. p. 339.

ry, he was called to a child, whose frænum had been cut two hours after its birth; who soon after fell into a danger of the same kind: he immediately thrust his finger into its mouth, and found the tongue not quite drawn back into the jaws; with his finger he reduced it to its proper position, and a sound was heard just as if the stopper was by force pulled out of a squirt. The child continued to make the motion of sucking, the sound of swallowing was heard during four or five minutes, and there suddenly appeared the symptoms of approaching suffocation. He immediately brought the tongue out of the jaws with his finger, and kept it in that position for a few moments: then the child began to suck the finger; and, the breast being offered to it, sucked greedily. It was thought to be quite out of danger: but, after the interval of an hour, the same danger returned; which Petit, who happened to be in the neighbourhood, happily cured a third time, and he thought it necessary to stop the motion of the tongue whilst the child sucked. For this purpose, he put upon the tongue a plaster two inches long, fifteen lines broad, and six lines thick, and bound it with a swathe of four heads. This was taken off that the child might suck, and soon after put on again; this method succeeded happily during the whole day, and the nurse retired to the country with the child. The stupid woman, thinking this apparatus unnecessary, removed it; and whilst she slept, the unhappy child was stifled and died. The tongue was found behind the uvula, as in the former case. Two or three years afterwards, another similar case occurred; but proper care being taken, the child was cured.

It seems still more surprising, that the same misfortune should have happened to a child two hours after its birth, though the frænum was not cut. Petit^a declares that he had seen this: by accident a finger was thrust into the mouth of the child, the stifling ceased, and it began to suck the finger; the same danger often recurred, and relief was procured in the same manner. The attendants were obliged to watch night and

^a In loco modo citato, p. 343.

and day to preserve the unhappy child from approaching suffocation; after two or three weeks, it made no more attempts to swallow its tongue. It is well known that the slaves of Angola strangle themselves by swallowing their tongues, if they are weary of too hard a slavery; that, by hurting their masters by their loss, they may revenge their sufferings. Who taught them this fatal art, of which it is not possible to make more than one experiment? Could the frænum of the tongue give way too much during their infancy? In persons who die of the falling-sickness, and are suffocated in the fit, the muscles of the tongue being violently convulsed, does something of this kind happen?

For all these reasons, Petit justly laid it down as a maxim, that the frænum of the tongue should never be cut if the child was able to suck. Foolish women, when they touch the frænum, by putting the finger under the tongue, are for having it immediately cut, not knowing that that ligament is in its natural place, and is of great use. But if an absolute necessity requires this, the nurse should be present, in order to give her breast to the child. For it begins to suck the blood which flows from this little wound; which soon ceases, if the operation be happily performed: but if the breast be not offered to the child, it continues to make vain efforts to swallow, and thus at last swallows its own tongue.

But when the cutting of the frænum is absolutely necessary, the greatest caution is to be observed, in order to avoid hurting the ranine vessels. If the surgeon can put his fingers between the tongue and the lower jaw, this cut may be easily made with a pair of scissors with blunt tops. But it often happens in such a case, that the tongue is so obstructed, that its tip cannot be raised up. He invented, described, and gave the figure of an admirable instrument^r, by which this operation may be safely performed; and he detected the faults of another instrument for the same purpose, which was generally praised before.

Sometimes, but rarely, the parts of the tongue

which are towards the sides, are bound with preternatural ligaments^s to the neighbouring parts; which are to be cut off, and may be done with safety enough, as there is no danger of hurting the vessels.

Another cause which impedes suction has been taken notice of; a cause which has scarce been attended to. It sometimes happens that the tongue is fixed to the hollow vault of the palate, and sticks as fast as if it were glued to it. In that case, the tongue is to be removed from the palate with a little spatula, or such like instrument, that the child may be able to suck and swallow. Three cases are related^t of children, who for several days together were unable to suck upon this account, but were happily preserved by this method.

There may likewise be obstructions in the uvulva, or in the fauces, which render suction and deglutition difficult, as they prevent the free action of the parts requisite for deglutition. Thus Hippocrates remarked, *That those children who are troubled with a cough whilst they suck, have generally the uvula larger than others*^v. Afterwards he continues to enlarge farther upon the ulcerous disorders which sometimes infest these parts.

If the upper lip should be slit from the birth, (which is commonly called “having a hare-lip,”) suction is difficult, chiefly as the vault of the palate is generally slit at the same time, and suction is obstructed by the air’s entering freely at this chink; or if they force a little milk out of the breasts, it generally runs out again at the nose: the same thing happens if food is given them with a spoon. So that it is no wonder if most of them die. Some, however, escape. For they seem by degrees to accustom themselves to close the slit of the palate, by raising up the back of the tongue, sucking with the tip of the tongue and with the lips. When they become more robust, as they advance in years, the slit lips are joined together by the surgeon’s art, in most of them the slit of the vaulted palate is di-

^s Levret l’art des accouchm. p. 222.
royale de chirurgie, Tom. III. p. 16.

^t Mem. de l’academ.

^v Quos infantes dum lac sugunt, tussis obsidet, illi uvam majorem habere consueverunt, *De Dentit. Charter. Tom. VII. p. 872.*

diminished by degrees, and is at last entirely removed^v. I have however seen some whose upper lip was entire from their birth, and the vault of the palate had a great slit in the hindmost part, which could easily admit the tip of the little finger. I have seen a man who was above fifty years of age, whose lip remained slit, no care being taken of it; the vault of the palate was however entire. Whether he had a slit before or not, I could not discover.

From what has been said, it appeared sufficiently, that milk is the natural and best nourishment for new-born children. We are now to consider, How that milk, retained in the stomach, should be changed, and what ill consequences may follow from its not being properly digested.

Milk, as it is well known, if it is left at rest in a clean vessel, at first appears of an uniform whiteness; then it throws up cream, white, thick, and fat; which being taken away, the milk remains skimmed, blueish, and more pellucid, because it at the same time contains the serous and cheesy part of the milk. For if coagulated milk, which is prepared of juice of the stomach of animals which chew the cud, is mixed with milk, it unites with it, becomes one equable coagulated mass capable of being cut, which in a short time turns to serum and cheese^x. From whence it appears that the milk is naturally coagulated in the stomach. Wherefore children, if they suck the breasts too eagerly, soon after belch up cheese; but soft, and not of any great compactness. At the same time it is to be considered, that human milk contains less of that cheese, than the milk of other animals: for human milk is very sweet and very thin; asses milk is the next to it; then that of mares, goats, and sheep; in fine, that of cows, which is the thickest of all, contains a great quantity of cheese. This furnishes another reason why human milk suits new-born children better than any other sort. But milk, especial-

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^v Levret l'art des accouchm. p. 224. Mem. de l'academ. royal de chirurg. Tom. I. p. 605.

^x H. Boerhaave, Chem. Tom. II.

ly when it is kept in a warm place, turns of its own accord to an acid acrimony; which being come, hastens and increases the coagulation of the milk: wherefore it is said in the text, that infants “suffer a great deal by the milk when it is too soon and strongly coagulated and compacted in the stomach.” After death, I have sometimes seen the whole stomach distended with thick cheese of a sour smell.

But whilst the milk coagulated, though still soft, comes out insensibly by the pylorus, it immediately meets in the duodenum with the saponaceous bile, and the pancreatic juice which resembles spittle, by whose efficacy that compacted mass is diluted, dissolved, and so prepared, that, in the remaining tract of the intestines, whatever is good may be sucked from it, and the useless dregs may be voided by the anus; which dregs are observed to be sufficiently solid and copious in infants nourished by their mother's milk only. But those dregs seem for the most part to owe their origin to the cheese contained in the milk. From whence Hippocrates seems to have observed: *Those who vomit up a great deal of cheesy matter, become costive*¹. It is worthy of observation that he has not said *milk*; but γαλακτωδες, something *milky*: for they vomit, or rather belch up, cheese; but it is soft, and thus the quantity of matter to be thrown off by stool is diminished. He also makes the following observation. *Those who make water oftener than they go to stool, are in proportion better nourished*². For in them whatever is capable of being dissolved by the force of the viscera, which make the chyle, is resorbed into the blood; whence there is less plenty of excrements; whilst the copious urine proves notwithstanding that they have drank milk enough. He has condemned the opposite extreme: *Those who do not make water in proportion, but frequently void crude matter, are subject to diseases*³. But he

¹ Quibus multum lacteum vomitione refunditur, illis alvus sistitur. *De Dentit. Tom. VII. p. 871.*

² Qui copiosius mejunt, quam dejiunt, pro ratione melius nutriuntur. *Ibid.*

³ Qui non pro ratione mejunt, sed a pueris alvus crebro crudum dejiicit, illi morbis sunt obnoxii. *Ibid.*

he speaks advantageously of frequent going to stool, accompanied with good digestion: *Those who have frequent stools and who digest well, enjoy their health better*^b. For this shews that a quantity of milk has been drank, and well digested.

Whence the milk is naturally coagulated in the stomach of a child; but the coagulation is said to be morbid, if it is effected too quick and too strongly. This may be in a great measure avoided, by attending to what follows.

Children indicate their disorders, and their want of food, by their cries alone. It often happens, that nurses immediately offer them the breasts, not thinking of any other cause of their crying; and if they have plenty of milk, they offer them again a short time after. It is good for children just born to suck frequently; but at the same time they should take but a small quantity of milk: for otherwise the stomach will be too much distended, and then it will not be able to act upon the milk contained in it; which soon growing sour, will occasion new cries; and if the child sucks again, all the bad symptoms will be greatly increased. Wherefore Moschion^c has prudently advised not to give the breasts at every cry, but to examine carefully whether the swaddling clothes being too hard bound, the limbs being distorted by them, or the excretion of urine or excrements, may not have occasioned these cries. But he says the child is then occasioned to want nourishment, if the hypochondria are hollow, the stomach being emptied; if so much time has passed since it sucked last, that it stands in need of nourishment; if it opens its mouth, moves its lips; catches at, and sucks, the finger when brought near its mouth. But, it is sometimes oppressed and tormented by the too great quantity of milk contained in the stomach; then it tosses itself this way and that, and the entrails in the chest swell on account of the stomach's swelling: in such a

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case,

^b Quibus copiosa profluit alvus, et belle concoquunt, ii magis sanitate fruuntur. *Ibid.*

^c Spachii Gynæc. p. 9. n^o 99, 100, 101.

case, the pain would be increased by taking in more milk. If no cause is discoverable, to which the crying can be ascribed, then Galen gives us to understand, that besides the nurse's nipple, there are two other ways of allwaging these pains: "A gentle motion and singing; by the constant use of which, they not only mitigate the pains, but procure the children sleep; which alone is sufficient to shew that they have a natural turn to music and exercise d."

But there is another cause which increases and accelerates the coagulation of the milk; I mean, too great a motion of the cradle. It is well known, that fresh milk, by agitation alone, may in the cleanest glasses be made in some measure to coagulate, and that frequently in a short time, the fat part of the milk, resembling butter, is separated from the other parts, and that it afterwards grows sour, and by delay is converted into a tainted acrimony. This butter being removed, the serum is left mixed with the cheesy part of the milk; which is called butter milk, is tolerably thick, and soon grows sour. When the women who attend children, endeavour to stop their cries by much rocking of the cradle, the blood in the stomach is soon changed in like manner. It was before observed at §. 93, where the ill consequences resulting from an acid acrimony in the stomach were treated of, that the stomach itself is not so very sensible; but that the upper orifice of the stomach is very much affected and pained by any thing sour; so that while the acid continues quiet in the stomach, no pain is felt; but as soon as a belch forcing upwards, occasions motions and changes of situation in the body, which causes a sour acid to stick to the uppermost orifice of the stomach, a troublesome heart-ache follows. How much then must an unhappy child suffer, whilst it is violently shaken as it lies in a cradle, in a situation almost horizontal! Nay even the brain, which is so easily moved at this age, may by the violent agitations of the cradle be disturbed; especially if they be unequal;

whence

whence vertigoes, vomitings, and convulsions, are with reason apprehended ^c. I have known a boy of a robust constitution, and eight years of age, who being kept by force in a cradle by his play-fellows, was by the rapid motion of the cradle seized with a vertigo and dizziness, which was followed by a vomiting of corrupt bile; the wretch lingered for a few days after.

Therefore those cradles are thought the best which do not stand upon the floor; but, being suspended with cords on each side, may be agitated equably with a very gentle motion: these, with very little friction, vibrate like a pendulum; the motion being insensibly diminished, they return to a state of rest, and at last continue so. In cradles which stand upon the ground, children generally awake as soon as the motion ceases.

Such an easy motion of the cradles is highly beneficial to children; for it is the most gentle sort of bodily exercise, and is both pleasurable and advantageous.

§. 1355. **F**OR this coagulated mass, gradually becoming more acrid and sour, renders the fæces of a greenish colour, and acid smell, and the matter thrown up by vomit, acid; hence arise gripes, flatus, pains, and many other bad disorders, especially convulsions.

In the chapter, wherein spontaneous disorders arising from an acid humour were treated of, and in those which follow, it appeared evidently, that the chief seat of acrimony, is, the place where the first digestion is made, I mean the stomach and intestines; and that these viscera are therefore first affected.

But the blood coagulated in the stomach grows more sour by delay; and a sourness having once taken rise in the stomach, whatever milk is sucked in is that instant strongly coagulated, and acquires the same acrid-

acrimony: hence wise physicians, as soon as a child has a four belch, or has vomited up four matter, immediately endeavour to dispel that acrimony by remedies which absorb the acid; being perfectly sensible, that the cure of this disorder becomes more difficult, if, by a long delay, the whole hollow surface of the stomach becomes as it were imbued with acid. For as fresh milk, upon being put into a vessel which has long held sour milk, is immediately spoiled; the same thing happens in the stomach, when fresh milk is poured into it. In that case, all that is contained in the length of the intestines degenerates into an acid acrimony, and the excrements turn green, and have a very sour smell.

A large liver, in new-born children, copiously separates the bile, which, being mixed with the cheese that comes out at the pylorus, dissolves its tenacious quality, and corrects or mitigates the acid acrimony; hence, in healthy children, the excrements are equable and yellow. But as soon as the bile becomes sluggish, or its quantity fails, white lumps of cheese come out at the anus mixed with the excrements; and at the same time the yellow colour of the excrements is changed into green, which is sometimes of so deep a hue, that the sheets are stained with spots resembling those of rust, and very hard to be washed out. Hence physicians acquire a certain knowledge of childrens being troubled with an acid acrimony, by inspecting their excrements. For if the excrements be equable, and without any mixture of cheesy lumps, it is looked upon as a good symptom. If yellow excrements are voided by the anus, but when left upon the sheets quickly turn green, this furnishes a symptom that an acid acrimony is approaching. But if they come out green, and of a sour smell, it is reasonable to conclude that the whole tract of the intestines is filled with sour cheese. See §. 63, 64. But it is easy to conceive, that from the perpetual irritation of such an acrimony, continually growing worse, pains, gripes, flatulencies, and many other disorders, may arise.

At the same time their whole bodies are emaciated;

ted; the abdomen swells by the cheese heaped up in the intestines; and if that cannot be evacuated, and the acid be subdued, they perish miserably. But when the disorder is so far gone, it is very hard to be cured. They have often a very voracious appetite; and Hippocrates seems to have hinted at this^a, when he says, *Children, who, whilst they suck the breasts, receive but little nourishment, become lean, and are with difficulty supported*; and in another text likewise, *Children who have a great appetite, and suck a great deal of milk, do not grow fat in proportion. Those who are somewhat loose, have a great appetite, and do not receive nourishment in proportion, are subject to diseases*^b.

Physicians often meet with such wretched children, who, being totally emaciated in body, have a swelled and prominent belly; and this chiefly amongst the lower sort of people, who, being overwhelmed with poverty and domestic care, often neglect the disorder in its beginnings, and have recourse to the physician too late. The little wretches continue costive too long, afterwards a violent looseness follows, their strength fails, and death puts an end to their sufferings. It may perhaps seem surprising, that a disease occasioned by an acid acrimony should end in a putrid looseness. But the corruption of the viscera, which are seized with a gangrene, comes out by stool; and besides, the cheesy part of the milk, though it at first turns sour on account of the copious mixture of serum, in its own nature borders upon that of animals. For old cheese grows rotten and acrid; nay, even if it has not rotted, it melts like horn when put upon a fire, and exhales the same sort of bad smell as the limbs of animals when they are burned. But cheese being tried by chemical art, produces the same sort of matter as generally comes by fire from the solid and fluid parts of animals.

The disorder however frequently does not proceed
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^a Qui mammam sugentes non probe aluntur, macilenti sunt et ægre reficiuntur. *De dentit. Charter. Tom. VII. p. 872.*

^b Voraces quique copiosum lac trahunt, non pro ratione corpulenti evadunt. Quibus modice (fertur alvus), et sunt voraces, neque pro ratione nutriuntur, morbis sunt obnoxii. *Ibid. p. 871.*

so far; but they die before that in convulsions, whilst the sour acid preys upon the intestines, and irritates the whole nervous system, which at that age is so easily affected.

Wherefore Hippocrates, in the text cited at §. 712. has informed us, “ That children are seized with
“ convulsions, if they happen to have an acute fever;
“ if they have not sufficient evacuations; if they lie
“ awake, are terrified, and cry, change colour, and
“ instead of a florid complexion take a red or livid
“ hue. But these things most frequently happen to
“ children from the time of their birth till they are
“ seven years of age.” Costiveness shews that there is matter retained, and the other ills are symptoms of pain. Wherefore we elsewhere meet with the following observation^c: “ When children have an acute fever, and are costive, and change colour, and watch,
“ and kick, and are red, they are convulsed.” For whilst children are seized with the gripes, they kick continually. Convulsions are likewise presaged by strange rollings of the eye-balls, which appear even when the eyes are shut: they also look with terror at those who attend them, an effort to vomit soon follows, and after that a convulsion.

§. 1356. **T**Hese disorders are cured by fixed antacids mixed with purgatives, by clysters of the same kind, gentle carminatives, and by oils given internally, and applied externally.

An acid acrimony can be overcome with safety by absorbing remedies, as was said before: but such remedies are insufficient in this case; and such remedies are required besides, as may dissolve those cheesy lumps in such a manner as to make them pass with ease through the pylorus, and then through the windings of the intestines. At the same time a gentle stimulating purge is beneficial, that they may be forced

^c Coacar. prænot. n^o 3. Charter. Tom. VIII. p. 858.

ced out more easily and more quickly by stool.

But as the cheesy gathering is increased by the acid, hence fixed antacids, alkaline salts, for example, are recommended, as they may be serviceable both in destroying the acid, and dissolving the gathering made before by the acid. For this reason, Hoffman highly recommended “ the use of absorbing powders, drank
“ with oil of tartar by infusion, one or two drops of
“ oil of anniseed or fennel, or even a little saffron,
“ being added to it; these ingredients should be mix-
“ ed together, and frequently offered to it ^a.”

It has been proved by plain experiments ^b, that if the oil of tartar is mixed with milk, the consequence is, “ that it is coagulated, and turns into coagulated
“ masses, which are not very hard and compact, nor
“ so easily hardened as by the acid.” Besides, “ If I
“ mix an alkali with milk coagulated by an acid or
“ coagulum, you see plainly, that what is commonly
“ asserted is not true, that that coagulation is again
“ resolved into its pristine liquid, and that it resolves
“ the alkalics which were thickened by the acids.” Therefore, as those fixed alkalics have a considerable acrimony, which might be pernicious if it was not mitigated by immediately meeting with the acid, and yet are not of service in dissolving the gathering by the acid; many physicians have thought it better to subdue the acid acrimony by absorbing remedies, and at the same time to apply such things as might have the power of dissolving the thick cheese, and are mild.

These remedies are principally recommended for this purpose: “ Gall, the yolk of an egg, and soap
“ made of pressed oil and alkaline salt ” Gall, if it be good, and in a sufficient quantity, dissolves the milk coagulated in the stomach of a child, whilst it is mixed with it in the duodenum. The coagulation of milk is found very copious in the first stomach of calves; but when it is mixed with the bile, it is again so dissolved, that it disappears in the fourth stomach of these animals. When, therefore, symptoms proceeding from
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^a Med. rat. et system. Tom. II. p. 341.
Tom. II. p. 302, 303.

^b Herm. Boerh. chem.

the coagulation of milk appeared, physicians concluded that gall was either in an unſufficient quantity, or too dead to perform its functions; but, in that caſe, nothing ſeemed more proper than to pour gall made in the body of ſome animal that is in health, into the child's body: the bitterneſs occaſioned ſome difficulty, and for that reaſon it was mixed with clyſters. But the gall of oxen, thickened by a gentle fire, is ſold in the ſhops, and, a little of the duſt of ſaffron being added, ſmall pills are made of it, which are to be properly gilt, ſome of which are given once or twice in a day, covered with thick pap: this remedy is ſometimes ſucceſſful, eſpecially if children ſwallow it quickly, before the pills, being ſteeped in the pap, begin to be diſſolved.

Others have for the ſame end applied the gall-bladder of an eel when full of its gall. For as this fiſh has no teeth, and digeſts well, it is thought that nature has given it a more active gall than any other animal. At the ſame time it was liked, becauſe ſuch unmixed bile, not being altered by fire, being held in its own bag whiſt it ſtays in the ſtomach, upon being ſwallowed, would at laſt run through the narrow paſſage, and mix with the contents of the ſtomach.

The yolk of an egg, as is well known, oils, and natural baſams, if they be mixed with them, make them fit to be diluted with water; nay, it even deſtroys the tenaciouſneſs of gums: for this reaſon it is recommended for diſſolving the coagulum of milk, which beſides the cheeſy, contains alſo the fat buttery part of milk, which contains what can be eaſily diſſolved by the yolk of an egg. At the ſame time, the yolk of an egg has no acrimony, and affords mild nourishment.

When alkaline ſalt, being rendered more powerful by a mixture of unſlack'd lime, is boiled with preſſed oil, water being added to it, there is made a complete union of the alkaline ſalt with oil; and from this union there ariſes a white maſs, compact, and capable of being cut, which can be completely diſſolved in water, which neither liqueſies in the air of its own

own accord, nor affects the tongue with a sharp alkaline flavour. It is then called soap^c; which is looked upon as better and fitter for physical uses, the more pure the alkali is, and the more genuine the oil, not being disagreeable either in taste or smell. There remains in this mixture the pristine force of lixivious salt, with which it clears away and attenuates glutinous particles, and that without any danger of griping. It prevents the acids from coagulating either the chyle or the milk; nay, when these are thickened by the acid, it again dissolves them, which alkaline salts alone cannot effect. " Soap does what water cannot do; what is not in the power of oil, it can effect. It does that with safety, which alkalics do with hazard. It can bring that about which other salts cannot." Now we know from certain and numerous observations, that a large quantity of Venetian soap may be born by the human body, without its doing any hurt. Wherefore nobody will be surprised, that, in the *Materia Medica* at this article, there is a prescription of two drams of soap, with the addition of a double quantity of the yolk of an egg, diluted in four ounces of water, and to be given by spoonfuls to children: to these ingredients are added rhubarb, crab-shells, and a mild syrup of marsh-mallows to sweeten them. It is proper to give this quantity of soap, whilst the distension of the stomach and abdomen indicate that a quantity of thick cheese is gathered and sticks in the intestines. For then there are generally voided by stool, cheesy lumps, which are at first white, afterwards stained a little with the colour of rhubarb; whence arises great ease to the patient, and the swelling subsides. A gentle stimulating purge of rhubarb promotes the dissolving force of the soap thro' the whole tract of the intestines, as do likewise absorbing powders which subdue the acid when it comes in their way. Thus this method admirably answers every purpose of cure.

Such remedies are required in order to dissolve and drive out the cheese: but a much less quantity of

soap is sufficient to prevent the too great coagulation of the milk in the stomach. Before, where the use of milk was recommended, for the cure of the Phthisis, and to assuage the pangs of the Gout, those who use a milk diet were advised to take six or eight grains of soap in a morning for this purpose.

If any malicious person, in order to hurt a countryman, should put only a dram of soap into a churn, in which milk is agitated with violence and a long time together that the butter may be separated from it, the separation of the parts which the milk consists of is either not effected at all, or not without great difficulty. For this reason I took care that a spoonful of such a mixture should for a few weeks be given twice or thrice a-day to children just born, with only fifteen or twenty grains of soap dissolved in it. In this manner I could prevent the dangerous coagulation of milk and acid acrimony, with good success.

Clysters, which have soap or bile in them, answer the same end, namely, of dissolving and bringing out the cheese if it had stuck in the thick intestines. The prescriptions are to be met with in the *Materia Medica* at this article.

Carminatives, that is, such remedies as dispel wind, may, without any thing else, be of great service, when they are gentle; (see what has been said upon this subject at §. 650. where we treated of Wind and Belchings): For, the irritating cause being corrected or removed, all that flatulency ceases.

At §. 1348, we explained the effects of oils taken internally, and at the same time told what cautions should be observed in giving them. They may, if applied externally, be of service with gentle friction; but if recourse is had to warm and aromatic oils for this purpose, they should be given either in small quantities, or with a mixture of other soft oils, lest the tender skin of children should be inflamed, and that would be productive of bad consequences.

But when an acid acrimony predominates in children, it is then proper so to regulate the diet of

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the nurse, that her milk may be the less disposed to grow sour; see what has been said upon this subject at §. 66.

§. 1357. **F**ROM this cause epileptic fits generally arise, the whole nervous system being irritated by this vellicating acrimony.

In infants, the head is very big; the whole body is soft; the nerves are very tender, and liable to be excessively affected by very slight causes. Therefore provident nature has taken care, as has been already observed, that their eyes should not be affected by too strong a light, nor their ears by too loud a sound. It is not therefore to be wondered at, if the nervous system be irritated by the vellicating of an acid acrimony, and fits of epilepsy should follow, which are to be dreaded, not only on account of the imminent danger of death, but also because they leave behind them very bad consequences during the remainder of life, even if the children should escape. Numerous observations shew, that distorted limbs, dimness of sight, deafness, an impediment in the speech, and perpetual idiotism, are the fatal consequences of convulsions.

Wherefore the celebrated Hoffman has said: "The diseases peculiar to tender children and boys, chiefly injure the head, and they have their fixed seat and habitation in its inside and outside ^a." Which he afterwards proves, by enumerating several of the disorders of children.

§. 1358. **H**ENCE, if the epileptic fits admit of a cure, they are to be cured only by the remedies above-mentioned.

Silly women trifle egregiously in hanging red coral, elk's hoofs, wolves teeth, and other amulets, about the neck of a child: however, a physician willingly

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bears with this, if they go no farther, and do not hinder a more efficacious cure, which alone can be effectual in removing these disorders; of this we have spoken already. But these disorders cannot be always got the better of, especially if they be of a long standing; whilst the attendants of children have recourse to many trifling remedies before they apply to a physician. After death, I have seen the stomach distended by a vast lump of cheese, and so full that it could receive neither food or physic: I have seen hard cheese thrust into the pylorus like a wedge, which thus by obstructing the passage from the stomach has caused fatal convulsions.

Physicians have debated, whether it is proper to give other food to a child whilst it sucks. Some have thought it highly dangerous, if broths, crumbs of bread in water, and other things of a like nature, were given with milk; and they thought that digestion was necessarily obstructed thereby.

The mother's milk, or that of a nurse in good health, furnishes the most proper and sufficient nourishment for children just born; and it does not seem proper that they should use any other food. About the third month, they are accustomed once or twice in a day to give them a spoonful or two of cow's milk, slightly boiled with a little meal, not so much to increase the quantity or strength of the food, as to use them by degrees to take food out of a spoon. On the first days, whilst this is attempted, the wretches chew such a sort of pap in their mouths, but they spit out the greatest part of it, and swallow the little. It is of service to have tried this, that there may be means of feeding the child if any bad accidents should happen to the mother or the nurse, which for a short time may prevent the giving it milk, though without rendering it absolutely necessary to wean it. Thus, for example, if the nurse should be all on a sudden agitated by a violent passion, the child could not suck her milk at such a time without danger; but a few hours should be let pass, till that disorder is entirely composed. For observations, which may be depend-

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ed upon, have shewn, that children have been suddenly convulsed who have sucked the breasts of a nurse transported with anger, or trembling with fear.

It is certainly dangerous to fill (with such pap) the stomach of a child that eagerly sucks the breasts, that it may receive the more nourishment: for then the stomach is loaded, and many ill consequences may follow; especially if, by adding a large quantity of meal, and boiling it a long time, they make pap, which with its viscid clamminess loads more than it nourishes. It is likewise worthy of notice, that there occurs a great diversity of meal in different countries. I remember that I brought the choicest meal from my own country, to serve my purposes upon a journey; the remainder of which, when I compared it to the Austrian meal, I plainly saw that the Dutch meal is much more viscid than the Austrian. If meal made from malt were made use of, that would have less clamminess: for it is well known, that grains of corn sprinkled with water soon sprout up in a warm place; but as soon as this sprouting is but begun, these grains are suddenly dried by a violent heat, and this is then called malt, and of it beer is made. By this vegetation thus begun, and soon after stifled, the mealy clamminess is very much diminished*. In bread the same thing is effected by a fermentation just begun, which is soon after suppressed by the heat of the oven; hence bread mashed, rather than boiled, in warm milk, may answer the same purposes.

For the strength of the child being insensibly increased, its stomach becomes so firm, that it is able to digest other food besides milk: but in this case they begin with slight foods, such as have a great resemblance to milk which is sucked out of the breasts; for thus the milk of animals is mixed with human milk. Many children can easily support this diet till they are weaned; and even afterwards they still are properly nourished with such paps, especially if they are prepared of bread twice backed, which is without any mealy clamminess, and equably united with milk; in

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* Brouzet essay sur l'educat. medic. des enfans, Tom. I. p. 215.

this it is likewise customary to mix the yolk of an egg.

Many advise to abstain entirely from the use of milk, as soon as the child begins to use other aliments^b. And therefore it must seem inconsistent to mix the yolk of an egg with milk, as it belongs to the animal kingdom. I can with sincerity affirm, that I never observed any ill consequences from this; and that I often used the yolk of an egg, as I have observed at §. 1356, to remove the too great cohesion of coagulated milk in the stomach.

All sudden changes in the food, even of men in health and of robust constitutions, are dangerous; wherefore it seems dangerous to lay aside the use of milk entirely at the time of weaning, unless the child has been accustomed to other foods during the time that it sucked the breasts. The excellent author himself acknowledges^c, that a healthy complexion is altered, and that children become lean whilst they are weaned, by such a sudden change of food. He believes, that children, whilst they are weaned, contract a disorder; but such an one, as, if properly treated, has its uses in the general œconomy of life. I own I would rather have the health continue unimpaired, than be disordered by weaning: for this reason I made it a practice, after the sixth month, and sometimes sooner, in case children began to dislike a milk-diet. (which sometimes happens), to order them panada with chicken-broth, or veal-broth twice a-day; but at first but in a small quantity at a time, for I was always attentive to observe whether there was any change in the child's health. I only remarked, that the excrements became of a more yellow colour as soon as they made use of broths; but I have observed no ill consequence arising from this, though I have so often had the care of royal children, being most intent upon every thing, according as the nature of my office required. They all easily bore weaning. Hippocrates gives his suffrage to this in these words: *Those who*

^b Ibid. p. 270.

^c Ibid. p. 259, 260.

who whilst they suck the breasts eat meat, are more easily weaned than others^d.

It appears from hence, that we have no such reason to lie under any apprehensions from a mixture of milk with other sorts of food prepared of the juice of flesh: nay, it was before remarked, that the thicker part of milk, namely the cheese, is more of an animal nature than serum and butter, with which it is mixed. Nay, it is customary with many to use the milk of animals and broths after weaning, and that without any sensible detriment: thus by degrees the weak creatures use themselves to various sorts of food.

In the mean time, in the choice of foods after weaning, we should attend to the age of the child, and its strength. Physicians would willingly not have weaning attempted, till teeth are grown numerous and firm enough, not merely to divide, but even thoroughly to chew, the more solid food^e; and then they advise to give the breasts but rarely to the child, but to offer it other food, that so it may be weaned by degrees.

But it sometimes happens, that the nurse's milk may fail by a disease, or of its own accord, before the teeth are become sufficiently numerous; then the milk of animals is to be substituted, if another nurse cannot be procured: if cows milk is given, it is diluted with one fourth part water, and, a little sugar being added to it, a sweetness is communicated to it, to make it the liker human milk. They sometimes pour such a mixture into a tin vessel, whose top, covered with soft leather, resembles a nipple in bulk and figure, and is pierced with many holes, that the child may easily take it: if more water be mixed with it, it serves as drink. At the same time, the various species of pap, which have been already spoken of, are given: thus they go on till the teeth become more numerous and strong, so as to indicate that a small quantity of solid food may now be allowed. But no ills should be

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^d Qui dum lac sugunt, interea cibum capiunt, facilius ablaectantur. *De dentit. Charter. Tom. VII. p. 872.*

^e Morichion apud Spach. *Gynæc. p. 10. n^o 113. Harmon. Gynæc. part. prior. cap. 22. p. 18.*

apprehended from milk with sugar in it^f. The ancient physicians gave even mead or honey to new-born children: nay, sugar being added to it, the milk is less powerfully coagulated. I have sometimes been surpris'd, that physicians have rigorously forbidden all use of sugar, whilst they the same day prescribed syrups prepared from sugar.

With regard to the time of weaning, it is generally agreed, that it then come when the teeth are come out firm enough and in a sufficient number; but as that time varies in different children, this cannot be exactly determined. I have seen, as I hinted before, an abortion of five months, whose two fore-teeth manifestly stood out in the lower jaw-bone. I have seen a girl in perfect health, and of a vigorous constitution, who had only her first tooth when she was nineteen months old. But the growing of the teeth more frequently begins about the seventh month, and the fore-teeth first come out in each jaw-bone. It often happens that the teeth, that is to say, the smaller teeth which are next to the eye-teeth or fangs, begin to come out before the eight fore-teeth have all come out. After this, the fangs follow, but more slowly. But as the gums, at the time of the teeth's growing, often itch, swell, and feel pain, it is looked upon as a great happiness, if the child can at this time suck the breasts of the nurse, as the gums are in such pain, that they cannot bear to be touched by a spoon; so that the weaning is protracted, according as the teeth are more quick or more slow in coming out. But as often the eight fore-teeth, the four molares, and the four eye-teeth, come out entirely upon the eighteenth month; physicians have advis'd to attempt weaning^g in half a year's time, or at the end of two years. But there scarcely seem to be any grounds for apprehensions for the child, if it should suck the nurse's breasts longer. The brave matron, whilst, treating the cruel Antiochus with contempt, she advis'd her youngest son

^f Brouzet educat. medic. des enfans, Tom. I. p. 273. ^g Æginet. lib. i. cap. 5. p. 2. versâ. Mosch. apud. Spach. Gynæc. p. 10. n^o 113.

son to suffer martyrdom for the laws of his country with fortitude, said; "My son, pity me, who bore thee nine months in my womb, who gave thee suck three years, and have brought thee up unto this age^h.

However, all sorts of food are not offered to children immediately after weaning; we should begin by the more soft, and proceed to the more solid food, that the viscera may be accustomed to these by degrees. They are eager for food, nay, even voracious, when in health; and though their teeth are strong enough, they scarcely chew their victuals, but immediately swallow them. Amongst the lower sort of people, it is customary for persons to be present at the parents table, who are delighted with the voraciousness of the children, and present them with every eatable that offers. These things are thrust down the childrens throats indeed, but they are not digested: the crammed abdomen indeed swells; but the whole body is emaciated, and they often die cachectic.

Cleanliness, however, is chiefly required; that the whole skin may be always clean, and particularly may not long remain defiled with filth or urine; for most dangerous rednesses of the skin, and troublesome eruptions, are thence to be feared. But children are likewise frequently obnoxious to cutaneous disorders, whilst filth remains collected in the hollows of the skin: which is wiped away by abstersion, and sponges full of warm water and milk; and as this is done twice a-day, care is taken that the same should not be again gathered on the skin. It has been observed, that children are more easily brought up and grow, if this cleanliness is properly attended toⁱ. Fischer^k happily cured a girl of an atrophy, by baths prepared of equal portions of water and milk.

It has been found of use to wash children with coolish water, and to accustom them by degrees to bear cold water: for thus the body is very much strengthened, and afterwards it is not easily affected by the changes

^h 2 Maccab. vii. 27.

ⁱ Act. erudit. 1727. p. 526.

^k De

remedio rustic. variol. per balnea, &c. curand. p. 30.

changes of the seasons ¹. In general, too soft an education, and those superfluous cautions which are recommended by too careful mothers, render the bodies weak, so that they afterwards feel the least change in the six non-naturals. The queen of France, when she had destroyed a great many of her offspring by being over solicitous in their education, by the advice of physicians entrusted the infancy of Henry IV. to a country man, and was desirous that he should use the same food and clothes with the offspring of country people: thus he proved robust, active, and capable of bearing fatigue. At least we have this from an authentic tradition ^m.

§. 1359. **A**S soon as children have surmounted all these disorders, and begin to live upon crude aliments, ripe fruits, flesh, cheese, and the like, they begin to be troubled with worms.

As soon as children are taken from the breast, and begin to use the ordinary food of grown persons, prudence directs that they should be gradually accustomed to more solid food, and that at first such dishes should be laid before them as are easy of digestion.

It has been frequently observed, that children at this period of their lives are troubled with worms: wherefore Hippocrates ^a, after enumerating the disorders of children newly born, and children breeding their teeth, said, that amongst other diseases, to which they are subject as they grow up, may be reckoned little round worms or ascarides. He does not here mention belly-worms; because he seems to be of opinion that this worm is coeval with man, as shall be shewn hereafter. Galen ^b, in his commentaries upon this aphorism, maintained that such worms are not the product of seed, but of putrefaction, especially if there

¹ Tillot avis au peuple sur sa sante sect. 340. p. 389.

educat. medic. Tom. I. p. 329.

^m Brouzet
Tom. IX. p. 121.

^a Aphor. 26. sect. iii. Charter.

^b Ibid. p. 122.

there should be a great degree of heat at the same time; and therefore he was of opinion, that worms are rather produced in children who grow up, than in such as are just born or in sucking children, because there is a greater degree of heat in the former.

It indeed seems probable enough, that worms are more frequently observed in the more adult, who live upon the ordinary food of the adult; but it cannot be denied that worms have been found in sucking children, and sometimes in new-born babes. The renowned physician De Lille, “observed in his own daughter, a child of eleven weeks old, whole nests of worms, though her mother had never given her any thing but the breasts, not so much as boiled milk^c,” but as he had observed many symptoms of worms in this daughter, and that even from her birth, he could scarcely avoid thinking that the worms were born with her.

That excellent physician, Van Doeveren^d, collected many observations of fetuses which had worms in their intestines whilst yet in the mother’s womb; his excellent dissertation is highly worthy of perusal.

A virtuous and well-descended matron, when she gave suck to a child three months old, declared to me that she had often seen little worms come out of her son’s anus.

Whilst a child sucks, it swallows milk not yet exposed to the air: as soon as it feeds upon food exposed to the air, the eggs of insects may easily insinuate themselves into the body along with these; chiefly if the meat is eat raw, and not boiled. Ripe fruits are often found full of worms; cheese often swarms, not with small vermin, but with the largest. I knew a man, who as soon as he had eaten white cheese, two days after felt a troublesome itching about the anus, occasioned by copious ascarides. The cheese was that which was formed out of the whole milk, the cream not being first separated from it; for this reason it is fat enough, and of an agreeable flavour. If he could abstain

^c De cordis palpitatione, p. 133.
intestin. homin. Lugd. Batav. 1753. p. 31.

^d Dissert. inaugur. de verm.

abstain from eating such cheese, or could but make use of a different sort of a cheese, that troublesome itching ceased in a short time, nor did the ascarides appear any longer.

For this reason, it does not seem surprising that animals come out of these eggs as soon as heat and moisture favour the exclusion. But yet the difficulty remains, that without the human body, human worms are not so obvious, that one can be absolutely certain that the worms so often observed, are produced by the eggs of these being frequently swallowed, which subject shall be treated of in the following paragraph.

§. 1360. **W**ORMS are produced from the eggs of insects that live in the air, or upon the earth, taken into the stomach, and incapable of being destroyed by the languid action of the stomach in children.

It is well known, that it was an opinion of the ancients, that worms and other animals, chiefly insects, may spring from putrefaction. But after the wonderful frame of insects was discovered, it appeared evident, that it was impossible that an animal should arise from rude and unformed putrefaction that has parts so numerous, so different, disposed in so extraordinary an order, always the same in number and situation, in the same species. Wherefore this opinion has grown totally in disrepute. Perhaps this opinion of the ancients took its rise from insects frequently laying their eggs in rotten matter, or matter disposed to rot soon, that they might both be cherished by the heat that accompanies putrefaction, and that the worm creeping out of the egg might find its nourishment prepared. Thus, in the heat of summer, flies swarming in the air, lay thin eggs upon the flesh of slaughtered animals, and that very expeditiously: a pregnant fly contains in its swelled abdomen fifty eggs, and sometimes more, which it can quickly scatter about upon the flesh that comes in its way, and thus it quickly defiles the food of man, and with worms which are soon

soon after to be born. But as it is a received opinion with many, that worms accompany putrefaction, they detest flesh in which a single worm is to be found. Certain it is, however, that worms chuse tender and savoury meat to lay their eggs in: they likewise know how to make choice of the best fruits, in order to place their eggs with safety in the soft pulp.

Nor do they spare living animals: but with a hollow sting, which contains the egg, they pierce the skin, under which they lay the egg; the worm emerging from the egg, gnaws the partitions of its habitation, inflames the place, is nourished by the pus that follows the inflammation, grows, is changed into a chrysalis, which being turned into a fly, pierces the skin, and flies away. Such apostems have been often observed in heifers.

But a fly entering the nostrils of stags and sheep, deposits its eggs in these cavities. Another species of flies hovers about horses; and, when this animal voids its excrements, enters by its anus before the sphincter is closed, and places its eggs upon the sides of the intestine. There are innumerable arts by which insects know how to provide for their offspring in such a manner as to procure a convenient place, a due warmth, and such food as offers; upon this subject the reader is referred to what Swammerdam, Valisnieri, Redi, Reaumur, Lionet, Bonnet, and others, with extraordinary industry and great labour, have collected.

As myriads of little animals have been so often observed in water; and in water where nothing of the kind was observed by microscopes, if it was exposed to the air, or poured in with the parts of plants, a great number of these would occur; it was from hence concluded, that the air which we breathe is full of living creatures. But as the earth swarms with these, it seemed the less extraordinary that the eggs of these, the taking of which seemed altogether inevitable, should multiply in the body.

But after that the indefatigable industry of the greatest men had discovered the diversity of sexes in insects, and copulation; and in others both sexes united,

which however joined in coition ; while some were delivered of living fetuses, and others were oviparous ; it was thought to be an universal law, that insects should be propagated either by birth, or by laying eggs. Whence it was inferred, that worms are generated in the human body from the small insects swallowed, or from the eggs which have entered our body. But when also, in viviparous animals, the eggs and ovaria were discovered, it was unanimously agreed upon, “ That every animal is generated from an egg.”

But it was reserved to the most ingenious Trembley, so eminent for his knowledge of natural history, to observe another mode of propagation amongst insects. He had seen in water a sort of little body, easily to be inspected by the naked eye, which in its bulk and figure is not unlike the *Carduus Benedicti*, “ *Benedict’s thistle*,” concerning which he was in doubt whether it belonged to the vegetable or the animal class. It appeared, upon a careful examination, that the diminutive body above-mentioned has a local motion, that by putting out its fins it seizes little worms that float in the water, that when caught it brings them to its mouth and swallows them : from whence he justly concluded it to be an animal ; and he called it a polypus, as it resembled the fish polypus both in its fins and in the general form of its body.

Rejoiced at this new discovery, he was still more surpris’d that another polypus of a like form is generated from the body of this little animal, just in the same manner as boughs issue from the trunk of a tree, grows quickly, and, even whilst still sticking to its parent, contends with it for food. Sometimes the polypus was of its own accord separated from its mother, swam alive, devoured little worms, digested them, threw them out. Sometimes, whilst still sticking to its mother, it generated a similar offspring in a similar manner, which in warm weather became as fruitful as its mother and grandmother. Thus the sprouting polypus, wonderful to behold ! exhibited to his eager eyes, a sort of a middle nature between the animal
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^c Memoires pour servir a l’histoire d’un genre de polypes d’eau douce.

and the vegetable kingdoms, as by its local motion and seeking its food it resembled an animal, in propagation resembled a plant. For polypus grew out of polypus, just as the branches of a tree grow out of its trunk.

But discoveries much more extraordinary were made. Whilst the polypus was cut in the middle, a new tail grew out of its head, and a new head emerged from the extremity of the tail, which stuck to the trunk: the same reproduction was observed, if the polypus was cut in two, lengthwise. The admirable Trembley proceeded in this division and subdivision; till from one polypus, divided into sixty parts, as many new ones were produced. Besides, with the highest dexterity, a dexterity not easily imitated by every one, he inverted the whole body of the polypus; so that the whole internal surface of the body became the external; and, on the contrary, the external occupied the place of the internal: even thus tortured, this animal devoured the booty that was offered it, as before; and a new offspring sprouting up, it afterwards appeared in its branching form.

I have seen many of these wonders with my own eyes, whilst the first inventor of these things shewed them to me; some of them I endeavoured to imitate, following the footsteps of so great a master, though with unequal steps. Afterwards the same experiments have been tried upon other greater insects, and not without success, upon earth worms, horse-leeches, &c. though these did not prove quite so fruitful as polypuses.

We at least learn from thence not to lay down general rules too easily, though they seem to be supported by observations numerous enough. Perhaps a greater variety of concealed circumstances prove the contrary. It is certain, that plants are generated from seeds: but there is not a single method only of propagation in plants; plants may multiply by the bark, the boughs, the leaves, and the roots, though they likewise grow happily from seeds. It is well known, that the roots of some plants, being cut into parts, and

committed to the fertile earth, give rise to a new crop. That species of aloes which is called the prolific, as I myself saw in the garden of the emperor, rears up a vast, branching stalk, which bears flowers; the flowers having fallen off, a great number of little new plants appear upon the branching stalk; which having fallen of their own accord, joyfully propagate their species. As in plants, there is not one, but many modes of propagation; may not the same thing obtain in the animal kingdom? Certain it is, that the polypus is not rendered fruitful by copulation; but in itself, and in each part of the dissected body, it has the power of producing its likeness. The celebrated persons, spoken of above with applause, have observed that some insects are viviparous in summer, and oviparous in autumn: some were found which were fruitful, and brought forth living fetuses, and that without any commerce with others: fetuses, coming out of their mother's uterus, were immediately preserved with care, alone, and covered with glass, and yet at a proper time they brought forth living fetuses; this new offspring was in like manner kept alone, and yet was fruitful; the same experiment succeeded for many successive generations.

Perhaps these, and many other discoveries, which we may hope for from the industry of such great men, will some time or other throw a new light upon the generation and propagation of worms in the human body. Let it suffice for the present to have just hinted at these things; for we shall hereafter, at §. 1363, treat further of this subject, in speaking of such worms as first occur in the human body; and these are those which we meet with in the ways of the first concoction.

As there is so great a number of insects, and the eggs both of the lesser and greater can so easily get into the human body, it did not appear so very extraordinary that worms were frequently found in the stomach and intestines. But the difficulty seemed greater, when they were found also in other parts of the
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body, which were not so easy to be approached. Whilst Ruyfch ^f found the worms of eggs not in the liver only, in the cystic duct, the porus biliaris, and the gall-bladder (the passage of worms to which place, from the cavity of the intestines, seems by no means difficult); but had often seen them in the kidneys of dogs, and once in human kidneys; nay, even in the arteries of living horses; and had read in authors of great renown, that worms have been found even in the brain; he owns that he began to doubt, “Whether
“all things are generated from an egg, as Harvey
“and his followers would have it.” For as the more solid sorts of food undergo so extraordinary a change from the action of the stomach and intestines, he acknowledged that he could not conceive how tender insects and their eggs, which had been subject to the action of these viscera, could remain entire. He adds this argument in proof of his assertion, “That no
“man ever saw such worms without the body;” which subject shall be treated of hereafter. Ruyfch, in his figures, has delineated a belly-worm taken out of a fish ^g. The reader may likewise have recourse to what has been said of worms upon another occasion at §. 916.

But the ancient physicians, treating of worms, seem to have had a doubt, chiefly with regard to the belly-worm, which sometimes acquires so great a length as almost to equal all the folds of the intestines. Aëtius said: “But it is a broad worm, if I may be allowed
“the expression, an alteration of the skin, which inwardly surrounds the small intestines, into a sort
“of living body, which constantly bites the stomach,
“and excites an unsurmountable appetite ^h.”

Wonderful observations have been made concerning worms found in different parts of the human body. The celebrated Du Verney ⁱ tells us, that a child, of five years old, constantly complained of a violent pain about the root of the nose; she kept her bed

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^f Observat. anatom. chirurg. n^o 64. p. 60.

^g Ibid.

^h Serm. 9. cap. 40. p. 173.

ⁱ Acad. des scienc. l'an 1700. hist.

three months with a slow fever; then violent convulsions followed: after her death, a worm was found in the longitudinal sinus of the brain, about five inches long, and like an earth-worm. It might perhaps be thought to be several polypuses growing together: such are often found in this sinus, and this might deceive by the appearance of a worm: but adds, that that worm lived from six o'clock in the morning, till three in the afternoon. It seems to have been of the smooth sort, which resembles earth-worms.

We read in Baglivi^k, in his epistle to the celebrated Andry, of a man of forty years of age, who was all of a sudden seized with violent pains in the stomach and the neighbouring parts; these lasted for eight days: afterwards he was both day and night convulsed every half quarter of an hour in his whole body, but it was only for a moment of time; with a paleness of the countenance, and a privation of strength. The wretched patient, being for eight days afflicted by these torments, all these symptoms suddenly ceased during about two hours; which being hardly elapsed, there succeeded a pain in the stomach and breast, so cruel and vehement, that he soon after died by its violence: the wretch said before his death, that his heart and belly were as it were torn by dogs. The corpse being opened, a whole worm was found in the cavity of the pericardium, hairy, alive, and almost the length of the palm of the hand. The heart was very pale.

The celebrated Senac^l, when he saw red polypous concretions exactly resembling worms in figure, left off, in the middle, his history of worms nestling in the heart or the cavity of the pericardium; but he declares, notwithstanding what De Capeironie assured him of, that he had found, in many dogs, bundles of worms rolled together between the basis of the heart and the pericardium; nay, even in the ventricles of the heart. Hence he concludes, that it is by no means impossible that these particulars may likewise have

^k Oper. omn. p. 699.
p. 437.

^l Traite de la structure du cœur, Tom. II.

have place in the human heart.

But as the heart sticks in a pericardium closed on every side, being fastened to no part of the body, unless to itself by vessels, the egg of the worm, or whatever else is considered as its origin, should have been brought hither by vessels: but how thin are these vessels, which from the surface of the heart, and a thin membrane of the pericardium, exhale a subtile dew, that perpetually moistens the heart! the first stamens of the insect should have passed through vessels still more subtile, if the worm had been found by Adrian Spigelius in the vitreous humour of an horse's eye^m.

It is true indeed, that in stagnant waters, in infusions of plants, animals extremely minute are discovered by the microscope; which, if they were mixed with our fluids, might with them pass through the smallest vessels. But no observations have taught us that these little animals can grow to such a bulk as to equal the palm of a man's hand in size.

It cannot therefore seem wonderful, if so many difficulties have been raised, by men perfectly skilled in natural history, against the generation of human worms, from the eggs which get into the body. It is not my business in this place to examine all particulars, as it is sufficient for the physician to know the symptoms which shew that those dangerous guests take up their residence in the human body, to foresee the ills which arise from thence, and to know the method and remedies by which they are driven out of the body. But the reader may have recourse to what has been said upon these difficulties^z, chiefly in Clerk, where a collection of these may be read. Swammerdam, so quick-sighted, so diligent in examining these matters, after he had considered all things, said: "It is the most difficult thing in the world to explain by what means worms are generated in living bodies, &c. I acknowledge, for my part, that I have met with so few

^m Boneti sepulchretum, lib. i. sect. 18. obs. 6. Tom. I. p. 422.
ⁿ Academ. de scienc. l'an 1709. hist. p. 36. Dan. Clerici histor. nat. et medic. lator. lumbric. lib. i. cap. 14. p. 546. et seq.

“ few satisfactory experiments in this matter, that I
 “ have not yet any thorough knowledge of the sub-
 “ ject; although I have seen many worms, and worms
 “ of various forms, in the living and moving bodies
 “ of terrestrial as well as aquatic and aerial animals
 “ But I cannot in these matters come to any solid and
 “ certain determination.”

It is not therefore to be wondered at, if men of learning have adopted different opinions whilst they investigated the origin of human worms. Some have thought that worms can scarcely be looked upon as a disease. A bag-full of living worms was found in the upper part of the stomach of a scaly Indian lizard, which equalled a small needle in length and thickness: the number of these came very near a thousand; nor did they seem to be the symptoms of a disorder, as just such another bag of worms was found in another lizard of the same species. A quantity of worms was likewise found in the stomach of a tyger^p. Which has been confirmed by later observations. As a certain species of insects is familiar to each species of animals, and even of plants, they were therefore inclined to think that worms are some way or other beneficial to the human body; or that they convert those particles of our bodies to their use which we can easily spare, and thus live at our expence, but without doing us a prejudice. They thought they would then only prove hurtful, when, being increased in number, or being for some other reason destitute of food, they gnawed or irritated the neighbouring parts. Hippocrates, as we shall hereafter shew, thought the belly-worm coeval with man. It will appear however from what follows, that worms are not altogether free from danger; although it cannot be denied, that sometimes a quantity of worms issues from the human body, which do not any way appear to indicate a disorder.

Monf. de Buffon, so much celebrated for his natural history and description of the king's cabinet of curiosities, after he had considered the discoveries made by the

^p Bibl. Natur. Tom. II. p. 708, 709.
 Pan 1703. Hist. p. 47.

P. Acad. des Sciences,

The acute Needham, in the seminal vessels of the poypus, the cuttle, and the calamary^p, was of opinion, that all bodies that live or vegetate might contain some organical parts, endued with life indeed, but which were neither animals nor vegetables, but a medium between both. The animalcules called spermatic, he maintained to be little organical masses, which, though endued with motion, were not animals. He asserted, that, in aliments composed of vegetable and animal parts, such particles lay hid, as might, with the assistance of a certain internal model, be formed into little living organical masses; the remainder, a sort of unformed materials of aliments, those little active particles being separated from them, and they being become useless, are driven out of the body. To these little masses, he ascribed the growth of the body, and the restitution of the lost parts; he maintained likewise, that a collection of these stuck in the places set apart for this purpose, and constituted the seeds of animals. He also thought, that the same organical masses, if they were collected in places where they could be united to each other, and could be in the way in a large quantity at once, that then they could in the body of an animal be formed into other animals; such are tape-worms, ascarides, the worms sometimes found in the veins and sinuses of the brain, the liver, &c.: But these animals do not owe their existence to other animals of the same species; for they are not generated in the same manner with other animals; but they are produced by that organical matter which serves to nourish the body, if it be extravasated or not sucked back by the vessels. For he thinks it probable enough, that that generating and always active matter, tending always to organization, produces worms and other diminutive bodies of a different species, according to the diversity of places and matrices in which it is accumulated.

The refined observations of that great man upon
this

^p Nouvell. decouv. par le microscope de T. Needham, p. 60, et seq.

this subject, are worth reading^r.

In the mean time, this opinion, though ingenious does not seem to be without great difficulties.

So that now the more common opinion prevails: that human worms owe their origin to the eggs which come from abroad into the human body, and are multiplied in the body itself, as is customary with other animals^s. “But though this opinion likewise is perplexed with its doubts, which can with difficulty be solved, they are not however of such importance, that there may not be room to hope, that by a farther disquisition into them they may at last be cleared. The system dictated by nature itself should not be disturbed, if it appears in any part deficient on account of the narrow limits of human knowledge^t.” But this opinion supposes, that animals like these have an existence without the human body, of which subject we shall treat hereafter at §. 1363.

§. 1361. **T**HE intestinal or gastric mucus affords them a nidus, where they stick, are nourished, breed more, and grow larger.

As human worms are chiefly found in the primæ viæ, and it is the most received opinion (as has been said already) that they owe their origin to the eggs taken in, it seemed probable that these must be destroyed by the peristaltic motion, or at least must be forced out with the other excrements by stool, except they were to stick to the sides of the intestines, whatever cause this sticking might be owing to.

It is well known, that the stomach and intestines are covered over with a glutinous matter, but beneficial and natural, by which their internal surface is lubricated and anointed, and at the same time defended from all acrimony as well as toughness of the food taken in, which in men of a voracious appetite is not suf-

^r Hist. Natur. gener. et particul. Tom. II. p. 18, 19. et seq. et p. 258, et seq.

^s Van Doeveren dissert. de verm. intest. p. 25, et seq.

^t Gaub. institut. patholog. sect. 587. p. 302.

sufficiently chewed before it is swallowed. This slimy matter might afford a tolerably convenient bed for the eggs of worms, in which they might be fostered, and by which they stick to the sides of the intestines, in such a manner, that they can neither be moved out of their place by the peristaltic motion of the intestines, nor by the victuals and excrements passing through the cavity of the intestines. And as this slimy matter abounds in young persons; hence it is thought, that they for this reason are oftener troubled with worms than others. It is not therefore surprising that worms have often been found covered all over with such slimy matter.

§. 1362. **F**OR this reason, worms are not commonly found in adults, unless they are of a heavy and leucophlegmatic constitution.

But as the body is more dry in grown persons, as the bile and all the humours that run into the stomach and intestines are more sharp than in young persons, hence they are less frequently troubled with worms, except there are slow, cold, pituitous humours in the body in great quantities, as is observed in those who are called *leucophlegmatic* by physicians. See what has been said upon this subject at §. 69, *et seq.* where the Spontaneous Glue was treated of.

At the same time, it is certain, that all grown persons, let their bodily constitution be ever so good, are not free from worms. When the whole body is firm, and the nervous system less easily irritated, they often do not feel such pain from worms as young persons are used to feel; for this reason, they are often troubled with worms unknown to themselves: these are driven out by medicines, especially by purging medicines; sometimes, too, they are voided at the time of acute disorders. Wherefore Hippocrates said: *But it is beneficial that smooth worms should be voided with the excrements, when the disease*

ease comes to a crisis ^a. But as, at the time that the disease comes to a crisis, there are many disorders in the body, and great changes of the humours; it is not surprising that smooth worms that are very moveable should be driven out of their place of residence. So that this forcing out of worms seems to denote a critical perturbation; it, however, has not always a good effect. But if the humours, corrupted by a severe disorder, should rush out copiously by stool, worms are at the same time forced out, but with a very bad effect. Thus, in Hippocrates, we read of a man, who supped when he was heated; drank a great deal; and then, being seized with an inflammatory pain in the upper part of the abdomen, had an acute fever attended with bad symptoms: *On the seventh day, irritated and disturbed humours were voided with worms* ^b; but without any diminution of the symptoms; and on the eleventh day he died.

Thus it was observed at Beziers, in the year 1730, that many were afflicted by a wormy colluvies in the manner of an epidemic disease. For though, at other times, the inhabitants were frequently troubled with worms; that year, persons of every sex, age, and constitution, were afflicted with them; and that to such a degree, that some of them died, recourse being had to all sorts of remedies to no purpose; and it was necessary to give pretty strong ones, that the worms might be forced out either upwards or downwards, many of which came alive out of the body ^c.

It has often been observed in camps, that worms have been voided by soldiers ill of the bloody flux, intermitting, remitting, or continual fevers. The worms that were voided in these disorders were smooth ^d. The excellent author tells us at the same time, that we should not think that these worms occasioned

^a Sed et lumbricos teretes, morbo judicium subeunte, una cum excrementis prodire, utile fuerit. *In prognostic. Charter. Tom. VIII. p. 628.*

^b Septimo die ab alvo irritata liquida et turbulenta cum lumbricis fecerunt. *Epidem. lib. i. textu 12. agrot. 12. Charter. Tom. IX. p. 114.*

^c Acad. des Sciences, l'an 1730. *Hist. p. 57.* ^d Pringle's observat. on the diseases of the army, part i. chap. 1. p. 10. chap. 3. p. 30.

casioned these fevers or the bloody flux, but only made these disorders grow worse. The same thing has been observed in our army. Hence it appears, that in grown persons also, whose bodies have been exercised by fatigue, there are worms which would not have come out if they had not been attacked by these disorders. But it seems very probable that these worms had an existence before the disease.

Add to this, that the tape-worm, or broad worm, is frequently observed in grown persons.

§. 1363. **W**ORMS are either round; flat and broad; or very small, which are called *ascarides*.

These three sorts of worms are commonly found in the stomach and intestines; wherefore we have treated of them chiefly in giving the history of Worms, and pointing out the method of curing them, though it cannot be denied that other sorts of insects have been found in these parts. For if the fruitful eggs of other insects have been carried to these parts, it does not seem surprising that they should be forced out in such a moist and warm place. Many observations occur in medical history of frogs and lizards, thrown up by vomiting, or voided by stool: for in standing waters, at the spring of the year, there is the spawn of frogs; and these waters are sometimes drunk unwarily by thirsty persons. From such, or a similar cause, those insects seem to be produced, which, being but little different from what are vulgarly called human worms, are found in the human body. An Indian, of thirty-six years of age, had long been troubled with a violent pain in the belly: as the Indians are often troubled with worms, the physician prescribed such medicines as destroy them, which are called *semen contra*, that is to say, seed against the worms. Soon after taking this remedy, the pains diminished, and the patient voided by stool a dead worm seventy-six inches and four lines in length, and four lines thick. That

worm was round; of a colour between pale and yellow; and from the head almost to the tail, there were reckoned an hundred and seventeen cartilaginous rings, all entire. This worm being driven out, the pain ceased entirely, the vive colour of the face returned, nor did he afterwards complain any longer^a. It is obvious enough, that that worm is entirely different from smooth human worms.

We meet with another surprising example^b. A noble youth, the only son of a mother who was a widow, was troubled with worms, and with violent pains in the belly, convulsions, &c. The unhappy youth perceived, as he thought, that a serpent crept in his stomach, and he felt his viscera torn by its biting. All the symptoms were aggravated by purgative bitter remedies, and such as are given for the worms: nay, convulsions followed, when scammony was given. That celebrated physician, seeing all the bad symptoms were increased by irritating remedies, gave the patient a large quantity of milk; which being drank, all the pains were quickly assuaged; and when returning, they were assuaged in like manner by drinking milk again. A purge was again given by another physician, but all the bad symptoms grew worse: milk being drank, they again ceased; and the afflicted mother committed the care of her son entirely to the celebrated Gallo, who endeavoured to entice the worm by the smell of milk towards the mouth, in hopes that it would come out of its own accord, or might be pulled out. This method proved successful: for at the third attempt, the worm ascending to the root of the tongue, and being seized by a pair of pincers, was pulled out. That worm was black, round, and hairy, thicker than a writing pen, and thirty Italian spans in length; it was preserved by the physician as a curiosity.

A man was troubled^c for two years with very violent cholic pangs, and an almost insatiable hunger. He voided by stool a great quantity of smooth worms, and sometimes whole clusters of them. Pills were pre-

scribed

^a Feuillee journ. des observat. phys. &c. Tom. I. p. 421. ^b Gallo dissertaz. del uso del latte, Tom. II. p. 133, et seq.

scribed to be taken at certain intervals of time, together with a certain decoction. The patient, being wearied out with his sufferings, took these remedies oftener than they were prescribed; whence faintings and syncope followed, so that he seemed at the point of death. At the same time, the abdomen made so loud a noise, that it could be heard at the distance of thirty paces and more. At last, worms came out, some of which were pretty long, especially the last, which was thought to be the most dreadful enemy to the patient. This worm came out alive sixteen feet long, keeping its head erect half a foot above the ground, whether it crept on the earth, or lay rolled up in a circle. Being put into a vessel full of water, it moved in a wonderful manner, always keeping its head, which was black, and round like a pea, erect: it had a neck very narrow, and two eyes: it had protuberances like vertebræ. The patient at last perfectly recovered, praising his rashness, which perhaps was necessary to effect the cure, or at least accelerated it.

There is likewise a description of a worm, which came out at the anus, half a foot in length; the whole worm was full of blood; whilst it came out, some pounds of blood came out with it; and for a few days after, a certain quantity of blood run out at the anus. This worm came out dead, and had rings like an earth-worm. The head was narrower than the rest of the body; the mouth triangular, like a horse-leech. The patient afterwards declared, that he had voided another worm of a greater magnitude, which came out bit by bit^d. This worm was seen by credible witnesses; and being drawn by a skilful painter, is exhibited in a picture.

I might easily collect many such instances; but let these suffice to ascertain, that in the human stomach and intestines there are sometimes found other insects besides round broad worms and ascarides; of each of which we shall now treat.

Round.] They are likewise called smooth. They

F f 2

are

^c Acad. des Sciences, l'an 1740. Hist. p. 72.
essays and observations, Vol. II. art. 26. p. 336.

^d Medical

are oftener found in the intestines than other human worms: but as, in their external form, they have a considerable resemblance to earth-worms, a large quantity of which is to be found every where; hence many have been induced to think, that the smooth worms are generated of the eggs of earth-worms, in whatever manner those may have entered the human body. Thus the celebrated Linnæus would have it, "That the worm of the intestines is of the same species with the commonest earth-worm^e." Scopoli, so well versed in natural history, has adopted the same opinion. "This appears from their having one common form, habitation, life, fruitfulness, and their common poisons^f." Their fruitfulness is much the same; but neither their habitation nor their manner of living are the same. Earth-worms take up their residence in the earth; they feed upon the earth, which is found in their bowels, and discharged by the belly: human worms dwell in the bowels, and feed upon very different food. Earth-worms have red blood^g; and Swammerdam discovered in them feet, or something like feet. He maintained indeed, that their opinion is ridiculous, who assert, that the worms in us take their rise from the eggs swallowed, as they require a very different sort of food. But he thought however, that it is then possible, if the eggs of such insects as have lived in the intestines of other animals, are taken into the human body^h. Human worms, as far as we can know, never suffer any metamorphosis, nor even earth-worms. Yet it is not impossible, that insects may, in the very intestines of animals, suffer a metamorphosis. The fly which was spoken of at §. 1360, enters by the anus of the horse, lays its eggs, from which a worm issues, which at a proper time is to be changed into a chrysalis, from which a fly comes afterwards.

But in other animals are found smooth worms like human worms, which shall be treated of hereafter.

The

^e In System. Natur. p. 85.
 min. 157.
 p. 710.

^g Swammerd. bibl. nat. p. 120, 247.

^f De Hydrarg. Idriens. tentamin.
^h Ibid.

The celebrated Vallisner, found round worms in the intestines of calves, even of calves who were still sucking the teat; he dissected them with all the dexterity he could, and found that the structure of them was different from that of earth worms: he saw true eggs, but in a very great number ⁱ. I cited Clark, because the observations of Vallisner and Redius are to be found in this author.

The admirable Edward Tyson ^k dissected smooth human worms, and found them entirely different from earth-worms. He thought he had discovered a diversity of sex in smooth-worms, and by figures delineated the male and female dissected: he delineated the seminal vessels in both sexes, and the eggs as seen thro' a microscope; of these, he believed there were more than ten thousand in one worm. It is reasonable to imagine, that this quantity of eggs is not hatched in the body: it seems probable, that many of them come out with the excrements; and if these afterwards any way enter the human body, or the body of other animals, the species may be propagated, as they then obtain the habitation and the food to which their parents have been accustomed. A surprising observation of the celebrated Lister, seems to favour this opinion ^l. A girl had an ulcer of eight years standing near the ankle, which gave her great pain: a surgeon cut up a young puppy, and put it upon the ulcerated place; when he afterwards removed it, he found at least sixty worms, some of which were lodged in the dissected body of the puppy, and some of them he took out of the ulcer in the ankle: the puppy was again applied to the ulcer, and when it was removed the second time, Lister was present, and saw but one worm, but that had a great deal of life in it: recourse being afterwards had to injections, many worms were killed. Examining these worms, he said what follows: " I maintain, that these worms, as far as I could acquire any knowledge of them, (and I had an opportunity

F f 3

ⁱ Dan. Cleric. hist. natur. et medic. lator. lumbric. p. 222, 252.

^k The Philosophical Transactions, &c. abridged, Vol. III. p. 130.

^l Ibid. p. 132.

“ tunity of making the comparison), are of the same
 “ species with the smooth worms, which children
 “ void by stool; they were three or four inches in
 “ length; they were almost all of the same thickness,
 “ as if they had been hatched at the same time; they
 “ were a little thicker than a duck’s feather; each ex-
 “ tremity ended in an acute top; these worms were
 “ hard, perfectly round, and without notches; and
 “ yet they moved with ease, such of them as were a-
 “ live. These worms were whiter than the smooth
 “ worms of the intestines.” Whence it appears, that
 the smooth worms can live upon the juices of the hu-
 man body, not in the stomach and intestines only, but
 in other parts of the body.

It is true indeed, that flies sometimes lay their eggs
 in ulcers; but worms of so great a magnitude are not
 generated from these, but much smaller ones. Nor
 does there seem to be any room for a suspicion, that
 those worms lay hid in the puppies intestines. The
 testimony of Lister is of great weight, as there could
 not be a properer judge of such matters, and as he had
 examined this subject with the utmost care. There-
 fore the eggs of these worms were either with the hu-
 mours carried to the ulcer by the vessels, or they must
 have come from without to the ulcer; in which case,
 round worms or their eggs might subsist even without
 the human body.

It does not seem a probable opinion, that round
 worms are coverings of belly-worms^m, though it is as-
 cribed to the celebrated Frischius. An accurate dis-
 section of the smooth worm shews the contrary: for the
 belly-worm was not found lurking under a cover; but
 there was found an alimentary duct, an anus, a mouth,
 and a fine apparatus of seminal vessels, &c. It is well
 known, that insects, whilst they lie hid under the form
 of a grub or chrysalis, receive no nourishment, nor even
 move with that vivacity that has been observed in round
 worms, that creep through all the intestines to the sto-
 mach, and from the stomach return to the intestines.

But though the eminent authors, of whom honour-
 able

^m Van Doeveren de verm. intest. p. 24.

able mention has been made above, found real eggs, an observation occurs ⁿ which seems to prove that smooth worms are viviparous. “ When a girl of Scarrintium was troubled with worms, and remedies were given her somewhat of the latest, she however voided one very large round worm; and when her father trod upon its head with his foot, other worms came from it: the girl however died soon after.”

This is but a crude observation, and depends upon the word of the father, who was doubtless ignorant of things of this nature. For if a smooth worm is shewn to the ignorant, through the coverings are plainly seen white feminal vessels, rolled up in a variety of shapes, which in figure have a sort of resemblance to the lesser worms that lie hid in a great one. Add to this, that in round human worms, distant about a third part of the whole length from the head, there is a chink (which in the smooth worms of calves is nearer to the head) by which, when the worm is trod upon, the whole system of spermatic vessels may slip away. I have in my possession such a smooth worm, entire, whose vessels all hang from that chink, and freely fluctuate in the liquor in which it is preserved. Nor is it an inconsistency, that round worms should be both viviparous and oviparous; as it was before observed, that there are insects, which at one season of the year are viviparous, at another oviparous.

But round worms generally equal a writing pen in thickness; they seldom exceed it, and they are sometimes smaller: their length varies; it very seldom exceeds a foot. I remember having seen one that was a foot and a half in length. Take notice, that we treat here of *round worms*, properly so called; for under this same head, it was observed, that sometimes worms of a different species, which greatly surpass round worms in size, are voided upwards or downwards. The worm which is described by Andry^o, seems to have been such an one. For that eminent person acknowledges, that it differed from a round worm,

ⁿ Amat. lufit. curat. medic. cent. 1. n^o 46. p. 513.

^o Tom. II

worm, in that it was wrinkled all over, and very plainly appeared to have a jaw.

Broad.] They are likewise called *tæniæ*, tape-worms, or belly-worms, from their flat figure, and the length of the whole worm, which is often immense. It is also called *Vermis solitarius*, “The solitary worm;” because it is thought to be always alone, and to equal the whole length of the intestines: this was the opinion of Hippocrates, who maintained that the broad worm is generated in a child whilst it is yet in the womb. He imagined that worms owe their origin to putrefaction: and as in a child just born, “if it is to prove healthy, the excrements are every day voided that had been collected the day before^p,” hence he inferred, that the matter to be putrefied neither stays long enough, nor was in a sufficient quantity, for so long a worm to be formed in the intestines: the case was different, when the child, lying hid in the womb, did not once evacuate by stool for the space of nine months. He takes notice that things are given to new-born children which drive out the excrements; he then adds: *Many children have with their first excrements voided by stool, worms, as well round as broad^q*. Such worms were certainly generated in the womb; and it was said before, that this has sometimes been done. He adds: *And the smooth worms breed, but the broad do not, though some say they do. For every man who has a broad worm, voids every now and then bits of excrements like cucumber-seeds along with the fæces, and there are some who maintain these to be the offspring of the worm. But in my opinion, those who speak thus do not speak rationally. Neither can such a number of young spring from one animal, nor is the capacity of the intestine so great, that the offspring can be nourished and brought up in it^r*. For he was of opinion

^p De Morb. lib. iv. cap. 15. Charter. Tom. VII. p. 613.

^q Multi sane pueri, tum rotundos, tum latos, lumbricos, una cum primo stercore, per alvum excreverunt. *Ibid*.

^r Et teretes quidem pariunt; lati vero non amplius, etsi eos parere dicunt. Quicumque enim homo latum lumbricum habet quale cucumeris semen alias atque alias cum stercore deijcet, et sunt homines qui hoc lum-

pinion that the broad worm grows with the child, and equals the length of the intestines at the age of puberty; but as the broad worm continues to grow, it is excreted with the excrements by the rectum intestinum, and it comes out like the seed of cucumber, often bigger. It is voided downwards by some whilst they are on a journey, or when they are excessively fatigued, and their bellies are warm, and it comes swelled from their rectum intestinum; and when it does this, it is either cut from the anus, or shrinks back. But these are signs that it does not breed, but that the thing is just as I say. If any one should attend a man troubled with a broad worm, and should give him a medicine or a potion; if the man should be well prepared, the whole comes out like a round globe, and he recovers his health. But if it should come out upon the medicines being given, the straight part is broke off the length of two or three cubits or more. And when it is broke off for a long time, no symptoms appear with the excrements, but afterwards they gain ground^s. From what has been said, it is evident, that Hippocrates was well acquainted with the broad worm, and at the same time the reason is plain why he thought it solitary; it is because that worm alone occupies the whole length of the intestines. Many physicians, and amongst them the celebrated Andry, have adopted the opinion of Hippocrates, which Dionis^t has refuted, who saw two belly-worms, each wrapt up in its peculiar membrane, come from a man who was totally emaciated, and worn away with a slow

fe-

rici partus esse affirmant. Mihi vero, qui talia proferunt, haud recte dicere videntur. Neque enim ab uno animali tot pulli nasci possunt, neque tanta est in intestino capacitas ut partus educare queat. *Ibid.*

^s Per rectum intestinum cum stercore excernitur, et velut cucumeris semen excidit; plerumque etiam major. Nonnullis vero iter facientibus, aut vehementer laborantibus, et ventre incalescente, deorsum prodit, ossisque ex recto intestino inflatus prominet, idque facit et ex ano refecatur aut retrocedit. Quod vero non pariat, sed velut ego dico, se res habeat, hæc signa sunt. Quod si quis hominem verme (lato) laborantem videret, et medicamentum aut potionem dederit; siquidem homo probe reparatus fuerit, totus rotundus ut globus prodit, et homo sanus evadit. Si vero ad medicamentum prodeat, et recta (pars) abrumpitur duorum aut trium cubitorum longitudine, aut etiam longe major. Quumque absumptus fuerit, multo tempore cum stercore nulla se produnt signa, postea vero ingrescunt. *Ibid.*

^t Dissertat. sur le Tœrnia ou ver plat. p. 14, et seq.

fever: in the space of fifteen days his strength and appetite returned, and he was restored to perfect health ^u. There are many observations which shew that the belly-worm is not always solitary, but that sometimes several take up their residence in a man's body at the same time ^v.

Many belly-worms are frequently found in the bodies of other animals; in dogs, I myself have seen three in different parts of the small intestines, and at a sufficient distance from each other. The celebrated Lister ^w declares, that he had found in a dog above a hundred broad-worms, insomuch that the intestinum duodenum was greatly distended by being so full of them. In a mouse, he found the duodenum, which greatly surpassed the stomach in bulk, filled in like manner with broad worms, but they were of as different forms as any he had ever seen. In that dog there were likewise belly-worms in the jejunum and ileum, but they were at some distance from each other; in the great intestines there were none. In the jejunum and ileum there were belly-worms, sometimes single, sometimes in pairs, and sometimes several were rolled up together. Near these worms he always found their excrements, which were of a greyish colour. The smaller extremity of each was turned upwards, as if they gaped for the chyle as it descended. All those worms were of the same length, they did not exceed a foot. The broadest extremity in breadth equalled the nail of the little finger, and ended like the point of a little spear. If the two parts of the whole length of the worm be measured from this broad extremity, then the joints begin insensibly to become narrower and narrower, and at last end in a small extremity, whose top ends in a globe which equals the head of a pin in bulk. He compared these belly-worms of dogs to the figure of a human belly-worm, which is to be seen in Tulpius ^x; and he found a great resemblance. What Tulpius affirms concerning this grub, appears to

^u Ibid. p. 21.

^v Van Doeveren dissertat. de verm. intest.

p. 39.

^w Philosophical Transactions, abridged, Vol. III. p. 119.

^x Lib. ii. observat. medic. cap. 42. p. 161.

to be highly worthy of notice : “ and that not once or twice, but the third time ; for so often was this insect voided by the wife of William Smith ; sometimes bit by bit, and mutilated ; but three times entire, and in every respect complete. Its head was not less acute than smooth, its mouth was very small, and its form just the same that Salomon Savari^{us}, a skilful graver, represented in a copper-plate whilst it crept upon the ground.” The plurality of belly-worms in the human body, is confirmed by this observation of Tulpius.

But the broad-worm is sometimes attended by worms of other sorts. Thus Raulin^v observed, that a man who was troubled with a belly-worm, voided smooth worms by stool besides. Wepfer^a found in a cat, killed by eating the Indian fruit called *coculus*, “ a broad worm still living, and several smooth worms.” In a strong wolf of six months old, killed by eating the root of wolf-bane, he observed “ a substance resembling coagulated milk, white, viscid, and partly yellow, incrusted the whole surface of the duodenum and jejunum. In the ileum were contained solitary worms, like those found on gourds, resembling the seed of the cucumber in figure and magnitude, sticking together, being two spans in length, ending in a little thread almost a span in length, in whose extremity there is a little globe which resembles a pin’s head : also belly-worms or broad worms, all still living^a.” This observation comes pretty near the description of Lister, which I have just laid before the reader ; but it is surprising that he should make a distinction between worms, such as are found upon gourds, which stick together and end in a thread, whose extremity ends in little globe, and broad worms. The plurality of broad worms, however, is confirmed by Wepfer’s testimony.

There seems to be a variety of different sorts of belly-worms. The celebrated Andry^b has described two.
What

^v Des malad. occas. par. les variat. de l’air, p. 426.

^z Cicut.

equat. histor. et noxæ, cap. 12, 186.

^a Ibid. cap. 11. p. 180.

^b De la generat. des vers. p. 194, et seq.

What distinguishes the first, is, that the joints, which constitute the length of the belly-worm, are long enough in the midst of its body; hence there is a sufficient distance between one joint and the next; but towards the extremities, these joints are nearer to each other, chiefly at that extremity which he calls the head, and which ends in a sort of globe, where they are not far distant from each other: his figure of such a belly-worm may be had recourse to^c. A sort of nipple is to be seen in the midst of every joint at its very edge, which has a hole in the top, in which he observed a bluish vessel, which reaches as far as the midst of the body's breadth. But those nipples are distributed in an unequal order; sometimes there are two on one side, and but one on the opposite side. Another species of the belly-worm is described by the same author^d, and differs from the former in that its articulations are less prominent and less distant from each other; hence that part which is in the middle between two articulations, is shorter than in the former sort. At the same time, there is a series of little knots or rough grains, which are placed along the whole length of the broad worm, in a right line, in figure resemble the back-bone. The celebrated Andry has given figures of many such broad worms.

Besides these two sorts, Dionis^e has discovered a third, which sticks to a little membranous sack, being shut up in it; which being broke, it bursts out. When such a broad worm comes out at the anus sticking to its little sack, it then might naturally be taken for a smooth worm; and perhaps this may have given rise to the opinion already mentioned, that smooth worms were the coverings of the broad worm. That accurate and dexterous anatomist Winslow^f, dissected a worm, which resembled a smooth worm, and found that a belly-worm was contained under that covering. Broad worms have been found in the livers of mice, but they were shut up in a sort of a chest^g. But the figures

^c Ibid. preface, p. 4.
sur le tania, p. 21.

^d Ibid. p. 195.

^f Ibid.

la descript. du cabinet du roy, Tom. VII. p. 315.

^e Dissertat.
^g Hist. natur. &c. avec.

figures of these worms seem to differ from those of the broad worms.

Perhaps other sorts of broad worms may be discovered by the industry of acute observers.

This surprising animal has greatly exercised the sagacity of philosophers. Some would have it, that the broad worm is not a single animal, but an heap of animals: but as those who are troubled with this worm, often void at the anus those worms which are called cucurbitine, because their figure very much resembles that of the gourd-seed which is sold in shops^h; representations of which, both living and dead, are to be seen in the place already cited; as it is manifest that they move, and are sometimes voided in so great a quantity, that a sick person, who had a belly-worm in his intestines, once shewed the celebrated Andry i a large box full of these worms; hence they have been looked upon by some, as the eggs or fetuses of the broad worm. Besides, when the broad worm is pulled in such a manner, that the joints are mutually separated from each other, then each joint represents a cucurbitine worm^k; wherefore we should not be surprised that some have been of opinion, that the broad worm is only a chain of cucurbitine worms. What favoured this opinion was, that frequently many ell of broad worm came out at the anus, though nothing analogous to the head or tail was found in the extreme parts; nay more, because frequently similar fragments of the broad worm came from the same body at different times; which may be easily explained, if cucurbitine worms mutually joined to each other from the belly-worm. Some would have it, that the cucurbitine worms, are not only mutually joined to each other, but that, after this union, they no longer constitute a numerous heap of worms, but one animal only, formed by the union of several; so that whilst new cucurbitine worms are joined to the broad worm lengthwise, its length might be increased immensely: thus the broad worm grows continually; and though

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many

^h Andry, generat. de vers. p. 224.

i Ibid. p. 218.

k Ibid.

many yards should come out by stool, that loss is quickly and easily repaired. For though this growing of several animals into one seems almost incredible, it may be observed, that in this age so many new and wonderful things have been discovered with regard to the generation of insects, that from henceforward it would be presumption to pronounce any thing impossible. For if any one had formerly been so bold as to assert, that there is an animal, which being cut into sixty-four parts, generates as many similar animals from thence, he would undoubtedly be laughed at: if he had added, that that same animal being turned inside out, like the finger of a glove, devoured its prey, and after having eat, digested it as before, and generated its likeness; this would have been looked upon by every body as an idle story. Yet we are now certain that all this is strictly true.

At the same time, it cannot be denied, that if the belly-worm be composed of cucurbitine worms, simply joined together, or grown into one animal, it ought in its whole length to consist of homogeneous parts. But if there could be found any part of the belly-worm unlike the rest, and of a different structure, then this opinion falls to the ground; yet it has long since been adopted by many celebrated physicians¹, and has since been defended by Valisner, Coulet, and others.

Sometimes the broad worm comes out entire, as Hippocrates (see the passage already cited) has remarked, in the form of a bottom, which if unrolled, whether longer or shorter, ends, the joints insensibly decreasing both in length and breadth, in an extremity very narrow, fortified as it were at the end with a little globe: that extremity of the broad worm is called the thread by some; and if that does not come out, the skilful are afraid the broad worm might afterwards grow again, though its length has come out by the anus. I have often seen that thread in entire broad worms, which have been driven out by diseases or the force of remedies.

The

¹ Marcell. Donat. de medic. histor. mirab. cap. 26. p. 255.

The celebrated Tyson^m gives us to understand, that many have looked upon this narrow part of the belly-worm as the tail of the broad worm; amongst these he reckons Spigelius and Amatus Lusitanus. But the himself believes it to be the head. For he found, in the ileum of a dissected dog, a broad worm aliveⁿ, which did not lie lengthways, but rolled up and doubled in many parts: cutting the intestine with caution, he sought out the narrow extremity of the broad worm, which was stretched out towards the narrow extremity of the duodenum, whilst its broad extremity being disengaged, and sticking to no part, tended downwards towards the rectum. But the narrow extremity of the belly-worm was fixed in the internal tunic of the intestine, and stuck so closely that he could not separate it from thence without difficulty, gently raising it up with his nail: whilst he was doing this, the worm twisted itself, and fell from the finger; and soon after fixed itself to the intestine, so that it could not be separated from thence, except in the same manner, and with equal difficulty. He examined that extremity with a microscope, and gave two figures representing what he had seen: he found that it was not flat, but as it were convex, thick set with hairs of the form of hooks, which he afterwards could see, even with the naked eye, when he examined it attentively. The same structure he observed in two other belly-worms.

Wepfer^o has in like manner taken notice, that worms stick strongly to the intestines: for he found a slimy matter, “with some broad, cucurbitine, and “smooth worms, of which several were still alive, fixing their trunks strongly to the tunic of the intestines, from which, even when the intestine was taken out, they hung like horse-leeches.”

Tyson^p was of opinion, that the part just described, which he took for the head of the broad worm, was chiefly of use in keeping the broad worm in a fix-

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^m Philosophical Transactions, abridged, Vol. III. p. 121. ⁿ Ibid. p. 124. ^o Cient. aquat. histor. et noxæ, cap. p. 206. ^p Philosophical Transactions, abridged, Vol. III. p. 126, 127.

ed place, and preventing it from easily coming out entire at the anus, so that several ells of the remainder of the body often come out separately. He doubts however, whether the belly-worm could, through a part as little as the head, receive such nourishment as might suffice for the support and increase of such a length of body: for this reason, he rather believes that those nipples, which are found in every joint of the belly-worm, as was said before, suck in the chyle, with which the whole length of the broad worm is found filled, and which occasions the white sediment at the bottom of the bottle when the broad worm is kept in spirits. But the celebrated Bonnet^a, to whom natural history owes such great improvements both with regard to the animal and vegetable kingdoms, saw the head of the broad worm more distinctly, and gave a figure of it. In the same place are collected all the particulars now known concerning the broad worm; and at the same time, the different observations of eminent men are accurately discussed, and it is shewn by exact reasoning and sure experiments what should be thought of each. It does not seem necessary to add any thing farther upon this subject at present.

But as, when the origin of human worms was treated of, it seemed to be the most probable opinion (see §. 1360.) that they come from abroad into the human body, and that they are not absolutely inmates of or congenial to it; it is reasonable to inquire, whether the broad worm is to be found without the human body. The celebrated Linnæus^r declares, that he, in the presence of seven of his associates, found a broad worm in a sort of pulse. The admirable Tissot^s informs us, that a child, of about four years of age, voided, at one and the same time, a smooth worm, and a belly-worm just forming, with a slight smarting of the anus: “ A thick thread, white, equable, a-
“ bout

^a Memoires de mathem. et physiq. presentes a l'acad. des Sciences, &c. Tom. I. p. p. 478,—530. et considerations sur les corps organisez. p. 102, &c.

^r In systemate naturæ observat. in regn. animale.

^s De morbo nigro, scirris, &c. p. 31. Van Doeveren dissert. de vermia. intestin. p. 33.

“bout five and twenty inches in length, rolled up in
 “about four or five circles, and exactly like those
 “the illustrious Linnæus found in the fountains of
 “Sweden, and a physician, a friend of mine, in a
 “fountain of Switzerland.” Raulin^t saw a piece of
 a belly-worm taken out of the intestines of a lamb
 not three months old, which was twenty-six feet long.
 The belly-worm is often found in oxen, in calves but
 seldom; many different sorts of it are often found in
 fishes^u. Now as these animals are food for men, a
 suspicion may arise that the belly-worm may in this
 manner get into the human body.

It is true indeed, that by boiling, roasting, and o-
 ther methods of cookery, meat may be so changed, that
 the eggs of insects cannot easily continue entire if
 they come this way into the human body. But some
 observations seem to shew that the broad worm can
 bear a great degree of heat without being killed. That
 illustrious king's physician Roseen^v, saw with his
 own eyes, seven witnesses being present, amongst a
 dish of boiled fish which was brought up to table, one
 that contained a belly-worm that was alive and mo-
 ved. I have often seen such belly-worms in fishes
 when alive. But I have found them alive in the cavi-
 ty of the abdomen without the intestines; I have
 kept them in water for four and twenty hours and
 longer, and I have plainly seen them move during all
 that time. The reader may consult Andry upon this
 subject^w; he observes, that many have taken these
 for the roe of fishes, and have eat them. Coulet^x
 has observed, that ascarides, which according to him
 do not differ from the cucurbitine worms of other au-
 thors, immediately grow cold as soon as they come
 out of the rectum, and excite a very troublesome sen-
 sation of cold in the external skin where they stick;
 he perceived at the same time that they quickly die in
 a cold air. He declares that they can easily bear warm
 water: nay, “he put two ascarides into warm veal-

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“broth,

^t Sur les maladies par les variat. de l'air, p. 444. ^u Philosophical
 Transactions, abridged, Vol. III. p. 123. ^v Des Schwedischen
 Akad. abhandl. 22. stück. p. 161. ^w De la generat. de vers. p. 53.
 et seq. ^x De ascarid. et lumbrico lato, p. 30, 31.

“broth, and by means of a moderate fire he kept
 “that in the same degree of heat in balneo mariæ
 “during twelve hours; and then he found them as
 “lively, active, and well, as they were when first
 “they came from the intestines.” It may be inferred from hence, that these worms can bear an intense heat without being destroyed; and hence the probability is greater, that they themselves, or their eggs, are received into the bodies of men with their food.

But before I dismiss this subject of the broad-worm, it would not be amiss to relate a surprising observation, which seems greatly to favour this opinion of Coulet. The celebrated Kœnig¹ put a living cucurbitine worm upon the back of his hand whilst warm, having first thrown a drop or two of milk upon it, and he perceived that the worm crept transversely, and that the little swelling or nipple, which is in the side of its body, which has been already spoken of when we treated of the broad worm, and which is scarce equal in magnitude to the punctum lacrimale in a man, began to swell, and the round lip being turned outwards, became ten times bigger than before: by the assistance of a convex glass, he saw a sort of proboscis rise out of this dilated cheek, a line and a quarter long, yellow at the extremity, and which was directed towards the drop of milk. But when he with a loud voice called to Herren Schwandius (a proper witness in cases of this nature), telling him that he saw what had never fallen under his observation before, he answered, that he enjoyed the same sight himself. The worm however suddenly drew back, that proboscis being struck by the coldness of the air, or the loudness of his voice. This observation shews, that those marks or little nipples perform the office of a mouth, and as such things are observed in each joint of the broad worm, there is reason to imagine that they in it do the same office. But he afterwards adds², that he had communicated some experiments to the most learned and experienced Ernstius, who wrote the dis-

fer-

¹ Act. Helvetic. Tom. I. p. 28.

² Ibid. p. 30, 31.

sertation concerning the second belly-worm of Plate-
rus, “ from which it appears, that these worms,
“ when they join, are so connected, that the canals
“ common to the whole series of connected worms,
“ are then disposed in such a manner, as, if some
“ coloured liquor was injected into the mouth above-
“ mentioned by a tube fitted to the mouth, it would
“ run through the whole circuit of the worm, repre-
“ senting a parallelogram, in a determined canal of a
“ sufficient breadth, and would on each side, in the
“ place where those worms are joined, pass to the
“ neighbouring worm, and in the same manner to
“ the next to that, so that the belly-worm would rise
“ with its sides admirably painted by that coloured
“ liquor, which would sometimes run out of the
“ mouth of the tenth worm in that series.” Thus
these worms might certainly live alone; and when
they are joined, they supply not only themselves,
but others with food, and receive it from them in
their turn. Wherefore it is not surprising that they
are voided by the same man one by one, as well as
linked together, being then changed into the broad
worm.

Certain it is, that the surprising observations of
Trembley, shew that the polypus, growing out of its
mother as a branch from the trunk of a tree, is not
only nourished by its mother, but nourishes her. It
is the happiness of the age in which we live, that we
know many truths which formerly would not have
been looked upon as probabilities. Many more disco-
veries may be hoped from the industry of such great
men, who will one day clear up the difficulties that
remain.

Ascarides.] Galen^a has defined these, as being, *Te-
nues quidem lumbrici, in parte præcipue inferiori crassi
intestini procreati*; “ Small worms generated chiefly
“ in the lower part of the great intestine.” They are
of a smooth figure, very little, and pointed at both
ends; they sometimes cram the extremity of the in-
testinum rectum with a great multitude, and are void-
ed.

^a Comment. in aphor. 26. sect. iii. Charter. Tom. IX. p. 122.

ed with the excrements. They are very restless and lively; and they seem to derive their name from thence. For the word *ασκαριζειν*, signifies the same thing as *χαριζειν* (see Fœsius's œconomy), namely, to dance, to leap, to palpitate, to move; for which reason, the continual motion of the mature fetus in the womb is called by the same name^b. Almost all those who have made mention of the ascarides, take notice of their smallness. "As to their figure, their colour, and " their magnitude, they have a great resemblance to " those worms which we see frequently in cheese." Whence many have been induced to think that they derive their origin from thence^c. It was before observed, at §. 1359. that a man was troubled with ascarides immediately after having eat a bit of white cheese. But the little maggots found in cheese are thought to differ totally from the ascarides; because these undergo a metamorphosis: it does not however seem to be an inconsistency, that the maggots of cheese, which are full as lively as the ascarides, when they are swallowed alive should be carried to the anus, and occasion a troublesome itching as well as they, which, as they in figure resemble the smooth worms that have been already treated of, but are much inferior to them in bulk, have been thought by some to be their fetuses. But as far as I can see, nothing certain has been discovered concerning this matter. The worms which are called *smooth*, are generally of the thickness of a writing pen, as was observed before; they sometimes even exceed it; but in the bodies of men and animals, worms of a similar figure have been found very small. Vandel, a celebrated physician^d, found in three dissected horses above sixty white maggots, very subtile and round. They crept freely over the whole cavity of the abdomen, and were found chiefly near the liver. These little worms were three or four inches in length, and half a Parisian line in thickness. The remainder of the description seems to come pretty near that

^b Galeni comment. in aphor. 37. sect. 5. ibid. p. 217.
 Doeveren de verm. intestin. p. 10.

^c Van
^d Domin. Vandellii dissertat. tres, p. 21.

that of smooth worms. He was afterwards informed by those that cut up horses, that such worms are to be found in a greater or less quantity in all horses without the intestines.

If the ascarides were the fetuses of smooth worms, could they sometimes insinuate themselves between the tunics of the stomach and intestines, and there grow into a greater bulk? I propose this as a doubt, because some observations seem to countenance such an opinion. Damianus Sinopeus^c found in a corpse a flaccid, swelled, benumbed stomach; with “two living worms” sticking between its tunics, one near the bottom, “the other in the upper part: each was a span long: and both were stretched straight out along the ventricle, excepting that in the middle they were bent a little downwards, and then raised again. But neither of them appeared either outwardly or inwardly, or could be moved out of its place, without cutting the partitions; though before I cut the partitions, I, by gently patting, pushed the uppermost, that upon its being put in motion I might find out the hole by which I imagined it had got in upon the approach of death; but I did not by so doing, or by any other means, discover any hole, though I examined both the internal and external surface, chiefly the former. The interstice of the tunics, in which each worm stuck, that is, the receptacle of each, being half full of pus, tolerably suited the figure and size of its inmate, no passage extending any farther.”

Hence that excellent physician inferred, that those worms had long lain hid between the tunics of the ventricle.

Storck^f found smooth worms lurking between the tunics of the intestines in a woman of five and twenty years of age, who, after having taken remedies for the worms, voided a great number upwards and downwards; yet the symptoms of worms lurking in the intestines did not cease, and she died of a consumption: In the corpse the intestines were gnawed, inflamed, “and

^c Parerg. medic. p. 62.

^f Ann. medic. secund. p. 228.

“ and corrupted in many parts, and many oblong
 “ insects were seen with the microscope. Between
 “ the very substance of the jejunum, (that is, within
 “ the membranes), three worms lay hid, each of which
 “ was above four inches in length.”

It is plain, that Coulet would have those worms which other authors call *cucurbitine*, called *ascarides*. This will appear evidently, if Coulet's ^s figures be compared with the figures which we meet with in Andry ^h. But he would not allow the *ascarides* of the Greeks, which are said to be short and round, to be a different sort of worms; for he says: “ I make no scruple to
 “ assert them to be nothing else but the young off-
 “ spring of our *ascarides* ⁱ.” But he does not seem any where to prove this assertion, that those lesser and round worms are changed, as they grow, into those called *cucurbitine* by other authors..

What the ancients have said concerning the *ascarides* is observed in the present age. Hippocrates ^k observed, that the *ascarides* are most troublesome in the evening; this I have taken notice of myself. The celebrated Bianchi ^l speaks of a friend of his, who for many years had been constantly from nine till ten at night, so troubled with the titillation of *ascarides*, that he could do no business at that time. At all other times he was entirely free from this torment. And this happened, “ constantly, in every season of the
 “ year, and every state of his body.” Galen ^m has given us to understand, that the *ascarides* are not to be driven out without violent remedies: Bianchi ⁿ acknowledges, “ that this breed of vermin is not to
 “ be exterminated by any remedy.” Hippocrates had wrote in his fourth book of diseases, that *ascarides* are generated in the breasts and privy parts of a woman; as Hollerius tells us ^o; and he adds, “ I myself know
 “ that they have been forced out of the urinary pas-
 “ fages

^s De ascarid. et lumbrico lato, post præfationem.
 des vers. p. 224.

^h Coulet, ibid. p. 5.

^k Epidem. lib. ii.

sect. i. textu 3. Charter. Tom. IX. p. 113.

^l Histor. Hepat.

Tom. I. parte ii. cap. 7. p. 166.

^m Method. Medend. lib. xiv.

in fine. Charter. Tom. X. p. 343.

ⁿ In the passage just cited.

^o In coac. Hippoc. comment. p. 262.

“ fages with the urine.”

After having laid before the reader the most remarkable particulars which are known concerning these three sorts of human worms, we come now to treat of the several disorders occasioned by them in the human body; by knowing which, we shall be able to discover the diagnostic symptoms which shew that there are worms in the body.

§. 1364. **W**ORMS, by their irritation, occasion nausea, vomitings, fluxes, faintings, a small, deficient, and intermitting pulse, an itching at the nose, and epileptic fits.

The reader has been already told what disorders are to be apprehended from worms seizing upon different parts of the body: they may interrupt all the functions of the parts in which they take up their residence. But at present we treat chiefly of those which worms give rise to when they lodge in the stomach and intestines.

Nausea, vomitings.] It was proved at §. 652. where we treated of Nausea and Vomiting, that the immediate cause of these is a convulsion of the muscular fibres of the fauces, the gullet, the stomach, the intestines, the diaphragm, and the muscles of the abdomen: whatever stimulates by irritating the above-mentioned fibres, or the viscera which are easily convulsed, was assigned as the remote cause. If a feather moved in the fauces, if a heavy glue partly fluctuating in the stomach, partly sticking to its sides, may occasion nausea and vomiting (see §. 71.) this will happen much more whilst worms creep through the stomach and intestines, or twitch them. Wherefore Hippocrates said: *Women, who, whilst fasting, vomit matter somewhat bilious for several days, when they neither are with child, nor have a fever, should be asked whether they at the same time vomit round worms; for if they do not acknowledge this, they should be told that it will happen. For this disorder happens most to married women, next to them maids are most liable to be afflicted with*

with it; men are but little subject to it^a. For the smooth worms are very moveable, and creep on every side towards the places where they were used to find food: the broad worm is less moveable, and for this reason it often takes up its residence in the body for many years without doing much hurt.

For the same reason, it is easy to tell, why those who are troubled with worms, swell immediately after eating; it is because the whole swarm of worms creeps towards the upper parts. It appeared at §. 646, where we treated of Flatus and Belching, that they spring from the elastic matter, which is now kept under by this contraction of the stomach and intestines, now is exploded with noise and violence, the pressure which kept it down being removed.

But this elastic matter is quickly supplied by the air which is swallowed down with meat and drink; and its quantity is increased, when, by the digestion of food, the air is more disengaged and separated from it: the cause which excites the intestines to contractions, is the motion and twitching of worms. Wherefore the sudden swelling of the belly after eating, is usually reckoned amongst the symptoms of worms lurking in the intestines.

Fluxes.] It was said before at §. 719, *et seq* whilst we treated of the Febrile Diarrhœa, that, besides the irritating stimulus, it was occasioned by the great force protruding into the intestines, whilst at the same time, in the intestines themselves, the contracting forces are weak, or in the absorbing vessels of the intestines there are obstructions which prevent their receiving any thing.

But the worms, by creeping and twitching, stimulate; and we see that the mouth of those who have qualms, is filled with something liquid: at the same time, worms disturb the natural peristaltic motion, which

^a Quæcunque autem, dum jejuna sunt, subbiliosa vomunt per multos dies, quum neque uterum gestent, neque febricitent, eas interrogare oportet, an lumbricos rotundos simul vomant; si enim hoc non consentiunt, prædicendum est, ipsis futurum esse. Fit autem hic morbus maxime quidem mulieribus, deinde vero etiam virginibus, aliis autem hominibus minus. *Prediction. lib. ii. cap. 14. Charter. Tom. VIII. p. 824.*

which so greatly promotes the reflux of the fluid contained in the cavity of the intestines. Moreover, the phlegm, the nest of worms, of which we shall speak at §. 1369, may impede in the easy reflux of the humours, by obstructing the mouths of the veins open towards the intestines. Add to this, that if there is a great multitude of worms, many of them die; those that are dead, rot in the intestines, and hence arises a new cause of fluxes.

Faintings.] Whilst a worm, sticking in the cavity of the pericardium, irritated the heart, it was no wonder that fainting-fits were frequent; but it has already been fully proved, that the motion of the heart is disturbed, when the stomach is disturbed; this has been shewn chiefly at §. 700, *et seq.* where we treated of the Febrile Delirium. For this reason, the ancient physicians called the upper orifice of the stomach *καρδια*, because it has so great an influence over the action of the heart. Galen expatiates upon the stomach and cardia, and concludes with these words: *Nor should we be surprised if its pains are accompanied with fainting fits, as well as a failing of the strength. For as some seem ready to faint if their finger be but hurt, it is no wonder that this should happen when the stomach is affected; since, on account both of their exquisite sensibility and their nearness, it can more quickly make the two parts correspond with it*^b. In another place, treating of the same subject, he enumerates many symptoms consequent upon disorder of the cardia, and then adds: *Scarce would you think that any of these symptoms proceed from the mouth of the stomach, as you would neither think swoonings to proceed from it, except it should seem often to happen so*^c. If we now take it into consideration, that the stomach and intestines are not only irritated and

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twitched

^b Nec mirandum, si ejus dolores, tum animi deliquia, tum virium lapsus, comitentur. Cum enim digiti offensio videantur aliqui animi deliquio laborare, mirum profecto non est, affecta stomacho id accidere, tum et ob eximium sensum, et ob situs vicinitatem, duo principia promptius in consensum adsciscere possit. *De symptom. causis, lib. i. cap. 7. Charter. Tom. VII. p. 60.*

^c Atqui horum symptomatum vix ullum crederes a ventriculi ore prodire, quemadmodum nec syncopas quoque, nisi crebro ita evenire videretur. *De locis affect. lib. v. cap. 6. Charter. Tom. VII. p. 492.*

twitched by worms, but are sometimes pierced through and through, a mortal syncope may follow. *But the very violence of the pain overpowers the strength; especially if anguish or gripes, the cholic or the iliac passion, should suddenly come on^d.*

[A small, deficient, and intermitting pulse.] For such pulses generally precede fainting fits, and they shew that the vital force begins to fail: the reason was assigned a while ago.

An itching at the nose.] The membrane which covers the inside of the nostrils, and which is called the pituitary membrane, seems to be continued through the pharynx, the œsophagus, and perhaps further: for all these places are moist with a sort of slime secreted from the arteries, and a similar slime anoints and lubricates the surface of the stomach and intestines. The artificial injecting of the vessels with wax, plainly shews that the apparatus varies in the nostrils, the œsophagus, the stomach, and intestines; nor is this to be wondered at, the functions of these parts being so very different. But there seems to be a continuation of the membrane in these parts, by which a soft slimy humour is secreted; besides that, it answers other purposes. Therefore, whilst worms creep in the stomach or intestines, it is no such wonder if the nostrils are slightly irritated; as through these, many nerves are distributed; and those sensible to such a degree, as to be affected by the smallest effluvia of odoriferous things, which escape the perception of every other sense. It is known almost to a proverb, that children troubled with worms are perpetually rubbing their noses.

Epileptic fits.] This was before taken notice of at §. 1075, n^o 4; and many observations confirm it, that worms have often caused epileptic fits and shocking convulsions. But likewise the catalepsy, in which surprising disorder, in one moment, as it were, the whole common sensory becomes motionless, all power of the mind

^d Sed et doloris vehementia vires prostrernit, nimirum si repente, vel morbus incidat, vel tormina vel colicus affectus, vel ileos. *Galenî Meth. Med. ad Glauc. lib. i. cap. 15. Charter. Tom. X. p. 360.*

mind over the body is suspended, all parts remain in the very same state they were in at the very instant in which the person was attacked with the disorder; that very disorder, I say, was occasioned by worms. The reader is referred to that surprising case, of which I myself was an eye-witness; it is described at §. 1040. I saw a most terrible vertigo cured in an instant, the worms being thrown out by a vomit: the vertigo chiefly attacked the man when he was fasting in the morning; it was somewhat diminished after breakfast. The broad worm is less moveable than the smooth worms; and yet Hippocrates has spoken of it in the following terms: *Whilst a man is fasting, it is often hurried violently to the liver, and occasions pain. But sometimes when it forces its way to the liver, the mouth is filled with spittle, sometimes it is quite the reverse. In some, when it forces its way violently to the liver, it causes a suppression of the voice, and much spittle runs from the mouth; but this soon discontinues, and then violent gripes in the belly follow. Sometimes the pain falls into the back, and even settles there*^c. The worms, especially the smooth ones, when food begins to fail them in the intestines, creep towards the duodenum, which lies under the liver; and Hippocrates seems, for this reason, to have said, that, in persons fasting, the worms are hurried to the liver. I saw in a young surgeon, who kept his bed with a slight fever, which, having past the crisis, manifestly began to decline, a privation of speech come suddenly, with an involuntary discharge of excrements. This I was the more surprised at, as in the whole course of the disease there was no symptom of a disordered brain, nor could I see any reason to apprehend that the morbid matter would be transferred to the head. Soon after, he vomited up a smooth worm alive; and immediately all

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those

^c Ubi homo jejunos fuerit, alias atque alias ad hepar fertur impetu, et loco em excitat. Interdum autem ubi ad hepar irrupit, sputa ad os affluunt, interdum vero minime. Nonnullis quoque, ubi ad hepar vehementer proruperit, vocis defectionem inducit, et ex ore sputa admodum multa fluunt, quæ paulo post sistuntur, subindeque tormina multa in ventre excitantur. Quandoque etiam ad dorsum dolor incidit, illuc enim etiam decumbit. *De Morbis, lib. iv. cap. 15, Tom. VII. p. 614.*

those bad symptoms vanished, and the disease concluded its course happily and in a short time.

A maid-servant of thirty-three years of age, who was subject to sudden and violent pains in the belly, chiefly about the stomach, was violently convulsed; nor could she utter a word, though her understanding and senses were unimpaired: there followed an universal contraction of the limbs, attended with a palpitation of the heart; her mind was not affected; dreadful pains in the stomach continued to torment her; and on the third day she died. As very bad and uncommon symptoms of her being poisoned appeared, the body was opened; and in the duodenum, and in the cardia or left orifice of the stomach, there was found a great number of worms of a great magnitude, some of which were fifteen or sixteen inches in length. The cardia was found bloody and gnawed^f.

But sometimes a troublesome cough is caused by worms. Diemerbroeck informs us, that worms have sometimes been found in the lungs; and he declares, “ That he saw a living worm, in form and magnitude resembling a large silk worm, but of a reddish colour, thrown out by a woman in a violent cough^g.” Wepfer, in the *aspera arteria* of a stork, “ found many worms resembling ascarides; but they were thicker and longer near the first divarication of the *aspera arteria*, and in the adjacent branches they were rolled up into a bottom^h.” It is not to be wondered at, that a cough may be occasioned by worms taking up their residence in the lungs; but it seems probable also, that a cough may be occasioned by worms sticking in the stomach and intestines.

It was before remarked, at §. 1345, that a cough had been occasioned by the touching of the colon or second of the great guts, the extremity of which, when cut, jutted out of the belly of a wounded soldier. Certain it is, that Aëtius reckons amongst the symptoms of worms lurking in the belly, “ Slight coughs,

^f Heisters Wahrnehmungen, n^o 372. p. 614, 615.
lib. ii. cap. 13. p. 306.

^g Anatom.
^h Cicut. aquat. histor. et noxa, cap. 19,
p. 236.

“ coughs, which frequently irritate, whilst nothing
 “ is thrown upⁱ.” The learned Friend^k, though he
 was of opinion that a cough was not reckoned amongst
 the symptoms of worms by the ancient physicians, de-
 clares notwithstanding, that many observations of the
 moderns and his own experience evince, that a cough
 is a very common symptom, especially in children
 who are troubled with worms.

It is obvious enough, that a variety of symptoms
 may prevail, according as worms irritate or gnaw
 these parts or those; not merely from the injury done
 to the parts, but likewise because other remote parts
 may thereby be disturbed in their functions, as ap-
 pears from what has been said.

In the Coan Prognostics, we meet with the follow-
 ing observation: *In those that have a looseness with
 worms, exquisite pains, with gripings, cause the parts
 near the joints to swell; from these come little red scales
 like blisters: these when they sweat are red, as if whipt
 with rods^l.* It is true indeed, that *τα θνπια* sometimes
 in Hippocrates signifies malignant and bad ulcers, and
 that a looseness often follows after a lasting bloody
 flux, in which the intestines have been ulcerated; but
 in many passages, likewise, *τα θνπια* signifies worms in
 the intestines: and this I take to be the meaning of
 it here; because I saw in a vintner, troubled with
 worms, this whole series of symptoms, in the order
 in which they are here enumerated: what chiefly sur-
 prised me in this man, was to see, after he had sweat-
 ed, his whole body covered with red striped marks,
 as if he had been whipt with rods. But in two days
 these marks disappeared, and after a short time his
 disorder was completely cured.

§. 1365. **W**ORMS, by consuming the chyle,
 occasion hunger, paleness, weak-
 ness,

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ⁱ Serm. ix. cap. 39. p. 171.^k Histor. of physic, Vol. II.

P. 100.

^l In lentericis cum animalculis (*μετα θνπια*) dolores tormine soluti
 partes circa articulos tumefaciunt: ex talibus squamulae rubicundae, pus-
 tulosae: exsudantes hi velut flagris caeli rubescunt. N^o 467. *Charters.*
Tom. VIII. p. 879.

ness, costiveness; hence a swelling of the belly, eructations, and borborygmi.

Worms, as appears from what has been said already, sometimes swarm in great multitudes in the intestines and stomach: the belly-worm has been sometimes observed to be of a prodigious length. These have occasion for food to support them, and make them grow; this they seem to find in the parts of the body where they dwell. Worms have been found in the kidneys, which had consumed their whole substance: in the liver, a worm took up its residence, which gnawed away that viscus^a; it was twenty inches in length, and an inch in thickness, red, full of blood, and like a gorged leech. The unhappy patient perceived the motion of a living animal; she complained of the most exquisite pains, and that she felt her inside gnawed; she had often told her physicians, and those that attended her, that a living animal tore her bowels. Certain it is, that such animals do not feed upon chyle.

But the worms of the intestines are washed all round with chyle; they are white; if they are put into water or spirits, they make it muddy by their white colour; they do not always twitch the intestines, insomuch that they often stay for many years in the body, especially the broad worm, without doing it much hurt. Whence it is evident, that they do not derive their nourishment from the very substance of the stomach and intestines; but from what is contained in the cavity of these viscera; and of this, mild chyle seems the fittest food for these animals. Van Doeveren^b had a doubt, whether worms did not suck the blood as well as the chyle. He speaks of a belly-worm which a friend of his saw voided, “from each” of whose mouths there run a drop of blood.” He thought this was confirmed by his seeing a worm voided^c, which was quite full of blood; this he thought to

^a Medical observations and inquiries, Vol. I. n^o 9. p. 67, et seq.

^b Dissertat. de verm. intestin. p. 48.

^c Medical essays and observations, Vol. II. n^o 26. p. 333: et seq.

to be a broad worm. But if the figure of this worm, represented in a copperplate, be examined, it will be found to differ totally from the broad worm; but it seems rather to resemble that which had eat away the liver, which I made mention of a while ago.

If all that has been just said be taken into consideration, it appears highly probable that the worms of the intestines are fed with chyle: nor do the arguments of eminent men ^d, who maintain the contrary opinion, seem to be at all conclusive.

Perhaps an observation of Coulet ^e may be urged in opposition to this. For he observed, that the worms which he calls ascarides, as soon as they came out of the anus, voided a sort of substance extremely white, in the form of a fluid; which appears plainly, if the ascaris be put into water or any sort of liquor: “For
“ then it visibly comes from the midst of the extre-
“ mity of the fore-part, almost in the same manner
“ as smoke comes from a chimney, or as a subtile va-
“ pour comes from the narrow part of an inverted fun-
“ nel, &c.” After some time, that white matter sinks to the bottom in the form of an exceeding subtile and white powder.

This white liquor, which appears like a drop of milk, is in a short time entirely dried up, and resembles chalk dissolved in gummed water and dried: it at the same time sticks tenaciously to the bodies which it meets with: but this liquor, whether it be still in its state of fluidity or dried, communicates an exceeding salt taste to the tongue. Whence it seems to follow, that it is of a nature entirely different from that of mild chyle.

But it should be considered, that the chyle of the intestines, if it affords food for the worms, must undergo other changes in the body of the worm before it can nourish it, and then it acquires qualities very different from those it had before: hence that salt white humour so soon dried, which is voided by the ascaris, is not chyle, but a liquor formed from the
chyle

^d Essais sur l'educat. medic. des enfans; Tom. II. p. 37, &c. ^e De ascarid. et lumbr. lato, cap. 8. p. 19, et seq.

chyle in the body of the worm.

If therefore, as it appears very probable, worms are fed upon chyle, the body is deprived of part of its nourishment, whilst worms consume it; hence there is a perpetual call for food, and those who are troubled with worms have voracious appetites. Thus Alexander Trallianus^f observed an insatiable hunger, called by the physicians *bulimus*, in a man who had a worm in his stomach. Sometimes qualms succeed to a voracious appetite, the worms being put in motion after the food has been eaten, as I have sometimes observed in persons troubled with worms.

Paleness, weakness.] As blood should be made out of good chyle, by the action of the vessels and viscera, from which the other more subtil humours should be separated, it is evident that the red blood must be diminished by the diminution of the chyle; whence arises paleness, which weakness will always accompany when it proceeds from such a cause.

Costiveness, &c.] It was observed in a former paragraph, that worms by irritating sometimes cause fluxes. But when the disease gains ground, and the quantity of worms is increased, the worms then consume every thing fluid contained in the intestines: what is thick remains; and because the peristaltic motion is disturbed, it is not easily forced towards the anus: hence the intestines, being filled, are dilated; their contracting force is diminished; and therefore the belly swells more and more, as daily observation shews in children troubled with worms.

Erućtations and borborygmi.] See what has been said concerning these at §. 648.: for the cause which produces convulsive motions in the intestines is here present; that is, the irritating caused by worms and the great acrimony of the retained matter: but at the same time, there is a great quantity of elastic matter generated by the putrefaction of the matter retained; and therefore there is an adequate cause of erućtations, flatus, and borborygmi in the bowels, in persons troubled with worms.

§. 1366. **T**HEY often perforate the intestines themselves.

There have been famous physicians who made it a doubt whether worms could ever perforate the intestines. For authors of natural history had not then described such organs in human worms, by which they could perforate and eat into the intestines. It cannot be denied that worms have been found in the cavity of the abdomen, and that the intestines have been perforated at the same time. However, they chose rather to believe, that that solution of continuity found in the intestinal tube after death, was the effect of a gangrene, which whilst it dissolves into putrid corruption, or is separated from the adjacent sound parts by suppuration, must of consequence make a passage for the worms to come into the cavity of the abdomen^a. It scarce admits of a doubt, that this sometimes happens. But a great number of observations, that may be depended upon, prove that worms can make a passage for themselves by perforating the intestines.

That melancholy case which I related at §. 1364. of a young woman, who, after having suffered violent pains, was seized with a tetanus, and died, proves this to a demonstration. For a great number of smooth worms were found in her stomach, and the cardia was bloody and gnawed.

The grievous pains which are so frequently observed in persons troubled with worms likewise favour this opinion, and therefore they are reckoned by Hippocrates amongst the diagnostic symptoms which shew that there are worms in the human body: *Pains in the mouth of the stomach, with gripes, cause the worms of the belly to force their way out^b.* Heister opened the corpse of a boy of seven years of age, who had for some time suffered grievous pains in the belly; and who, though he had a very good appetite, died, his plumpness being

^a Brouzet, sur l'educat. medic. des enfans, Tom. II. p. 38.

^b Oris ventriculi dolores cum tormine, ventris animalcula (Σνπια) erumpere faciunt.

ing insensibly diminished. In the abdomen he found a few ounces of yellow water, which being absorbed by a sponge, several smooth worms discovered themselves to his view; and though the corpse was opened the day after his death, he found but one amongst them alive. The small guts were full of holes, and contained many more worms, but they were all dead. He made no mention of a gangrene; but he found in a certain place of the small guts, a red, hard tumour, which had some open holes, through which he imagined the worms of the intestines had crept into the cavity of the abdomen^c. This very observation is to be met with elsewhere in the Latin language^d.

Various remedies were given, and to very little purpose, to a woman who had been troubled during five days, with gripes, vomiting, and costiveness: the frequent use of emollient clysters procured her an evacuation by stool, which somewhat eased her gripes; but the vomiting continued. On the eighth day she vomited up a smooth worm, which in length equalled a thumb's breadth. Thence she felt some ease about the stomach; but the gripes continued, though not so violent as before.

She gave her physicians to understand, that she had had a tumour, like a small hen's egg, in her right groin for eighteen months, which had never given her any pain, but yielded to the pressure of the hand. That skilful surgeon Douglas^e suspected it to be an hernious tumour; and treated it according to the rules of art for three days, which was some relief to the patient. On the fourth day the pain was much increased in the tumour, with a sort of shooting; she then first suffered the surgeon to inspect the place affected, which she had before obstinately hid from him. He found a large inflammatory tumour tending to suppuration and without any swelling of the inguinal glands: having applied a suppurative poultice for two days, the tumour was opened on the fourteenth

^c Heisters Wahrnehm. n^o 515. p. 869.
Vol. I. obs. 172. p. 391.

^d Act. phys. med.
^e Medical essays and observations, Vol. I.
n^o 19. p. 223.

teenth day after the disease began, by a common caustic; there flowed from it about four ounces of ferrous pus, which was gradually changed into a pus of a better sort: but on the twenty-third day, there came a smooth worm out of the ulcer; and at the same time it was recollected, that two days after the opening of the ulcer such another worm had come from it: about the fortieth day, the ulcer was closed up: however, a month after, there appeared a little opening in the scar, thro' which the thin part of the excrements came out. But she easily bore with this slight ailment.

The celebrated Bonevoli^f treated a similar disease with that above-mentioned; and he having weighed all circumstances, was of opinion that the intestine was perforated by worms, “as the dissection of bo-
“dies has often shewn to be the case^g.” From the urinary passage of a boy of seven years of age, there often came worms of the intestines, which his father used to extract whilst they stuck near the nut. Once whilst he attempted to do this, the worm broke, and the remainder sticking in the urinary passage, prevented the evacuation of urine; but the worm consuming in a little time, as that celebrated physician had foretold it would, the urine afterwards had a free passage. The boy being dead, two stones were found in his bladder. But the neck of the bladder was obliquely pierced; this hole answered to a similar hole in the intestinum rectum: thus a passage was opened, by which worms could pass from the intestine into the urinary passage. However (not to suppress any circumstance) it remains doubtful whether worms made themselves a passage by gnawing. For Alghisi, so eminent amongst the surgeons of his time for the operation of cutting for the stone, believed that the intestinum rectum, and the neck of the bladder, might perhaps, after the small-pox, be eaten away by an abscess seizing upon those parts; but it is not said in the history

^f Dissertat. e osservazion. n^o 17. p. 145, et seq.
pp. 149.

^g Ibid.

story of that disease, that such an abscess had ever been known in those places^h.

Tulpiusⁱ observed, that a living worm burst from an ulcer in a woman's groin; and though the surgeon was apprehensive that an incurable ulcer in the intestines would be the consequence, she was cured soon after.

The admirable Jacquin, whilst he resided in America, in order to collect those specimens of natural curiosities, which contribute to fill and adorn the cabinet of our most august emperor, informed me by letter that the inhabitants of those countries often died, their stomach being eat away by worms. Few will be inclined to call in question the sincerity and diligence of such a man: his excellent treatise upon botany, which was published this year, is a shining proof of them.

I believe what has been said is sufficient to prove, that the intestines being perforated by worms may be justly apprehended.

§. 1367. **W**HICH is the cause of their proving frequently mortal.

It is true indeed, that Hippocrates, treating of the Broad worm, says what follows: *Nothing very dangerous happens to him that has this worm, during the whole time that he is troubled with it; but when he is weak, he is with difficulty restored to his strength. For the worm takes some part of whatever enters the stomach. If therefore he be treated in a proper manner, he recovers; if he is not cured, the worm does not come out of its own accord; yet it does not occasion the patient's death, but grows old with him*^a. It cannot be denied that

^h Dissertat. e osservazion. 8. p. 199, et seq. obs. 12. p. 199.

ⁱ Lib. iii.

^a Qui hunc vermem habet, ei toto quidem tempore nihil valde metuentum accidit; quum vero debilis extiterit, ægre reficitur. Vermis enim eorum quæ ventriculum ingrediuntur, partem aliquam assumit. Si igitur, ut convenit, curatus fuerit, convalescit; si vero non curetur, sua sponte non exit; mortem tamen non infert; sed una consenescit. *De Morbis, lib. iv. cap. 15. Tom. VII. p. 614.*

that the broad worm sometimes takes up its residence in the body for many years without any great danger, but not always without giving some pain. But the particulars already related concerning worms sufficiently prove that death is often to be ascribed to them; whether it be a slow death, as when unhappy children for want of nourishment die of a marasmus; or a sudden death, when they are taken off by violent convulsions. Several observations have been laid before the reader, which evince this truth.

§. 1368. **W**ORMS are discovered from the age, the diet, and the constitution of the patient, and from the effects enumerated at §. 1364, to 1366.

Before we treat of the method of curing worms, it will be necessary to consider those symptoms which shew that there are worms in the body, lest anthelmintics should be administered when the symptoms arise from other causes. If worms are voided, and the same symptoms continue, or grow worse, we may safely conclude, that more lie hid in the body. But when no worms have been voided, and there is, notwithstanding, room to suspect that there are worms, then every particular should be carefully examined, in order to find out a true diagnosis.

[Age.] Young persons are most troubled with worms; hence worms are reckoned amongst the diseases of children. Voracious persons, whether young or old, are often afflicted with worms.

[Diet.] Jacquin observed, that those who eat a great deal of unripe fruit, and who live much upon fish and salt meat, are more frequently troubled with worms, than those who live upon a better diet. An honest monk of the Franciscan order, who had lived many years at the emperor of Morocco's court, informed me, that he knew many there who loved to eat raw fish, and were very much troubled with worms; and great danger, if this pernicious race was not driven out of the body by taking a strong purgative every
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month. The children of the poor, who for want of good food, eat whatever offers, are much oftener troubled with worms and swelled bellies than others, as appears from daily observations.

Constitution.] Namely, if it be lax and phlegmatic; for in such habits, all the corporeal functions are feebly exerted. See what has been said upon this subject at §. 1360, 1361.

Effects.] These have been enumerated in the aphorisms cited in the text.

But worms sometimes attend epidemic diseases. The epidemic disease that prevailed at the first siege of Buda, was attended with worms ^a. The same has been observed in armies, and after great inundations. Many observations which confirm this, have been collected ^b. In the spring of the year 1763, whilst I was in the country, I had more poor peoples children to cure of worms than in other years. It had been preceded by a long and severe winter. In autumn, people are more apt to be troubled with worms than at any other time of the year. Hippocrates observes, *In autumn, worms and swoonings are most rife* ^c. This is likewise confirmed by Raulin ^d, who observed a man troubled with a belly-worm, who, during five and twenty years was every autumn tormented with colic pangs, though during the remainder of the year he could do his customary business, and had a very good appetite. During fourteen years he had no symptom besides the colic pangs, returning periodically every autumn, excepting that towards the end of that term cucurbitine worms came out at his anus: these are looked upon, and not without reason, as symptoms of a belly-worm lurking in the body.

Some other symptoms of worms lurking in the body, are to be met with in authors. Thus Jacotius gives us the following information: " They are discovered in children, as well by other symptoms, as
" by

^a Marsigl. histor. Danub. Tom. VI. p. 114.
ren, disert. de verm. intestin. p. 27.

^b Van Doever-

^c Autumno maxime lumbrici, et cordialgia. *Epidem. lib. ii. textu 3. Charter. Tom. IX. p. 119. et lib. vi. Epidem. textu 14. ibid. p. 467.*

^d Des Malad. occas. par les variat. de l'air, p. 424, &c.

by that common one; namely, that imagining in their sleep that they feel themselves bit by worms in the belly, they make a motion with the muscles of their jaws, expressive of what passes in their imagination^c.

Others to the above-mentioned symptoms have added a particular sort of smell which cannot be described by words, sobbing, terrors during sleep, a nose white like wax^f, sudden changes of the complexion. The celebrated Alexander Monro has added another symptom: "I have often observed," says he, "that the eye-ball is dilated in those who are troubled with worms in the stomach or intestines; and if it cannot be looked upon as a peculiar and essential symptom of the disease, it may be considered as a concurring symptom which admirably indicates it^g." This symptom he founds upon the union of the eighth pair of nerves with the intercostal nerve. For if the intercostal nerve be cut in a dog, the eyes grow dim, lose their lustre, become hollow; and the pupil contracted. Whence he concludes, that the intercostal nerve serves to dilate the pupil, and that its action is increased by an irritation of the nerves of the stomach and intestines.

In a true gutta serena, the pupil is greatly dilated, the eyes appear bright, and as it were sparkling. Jacquin, while he resided in America, observed that the inhabitants were frequently afflicted with worms, attended with a drowsiness, gripes, bright eyes, but a little yellowish; that the lower eye-lid was yellowish or bluish, and that they were often seized with convulsions, which were quickly fatal. Thus the opinion of the celebrated Monro is greatly confirmed.

It will be no disadvantage to collect as many symptoms as possible, the better to come to the knowledge of the disease. For sometimes there occur many symptoms of worms, though there are none in the body. St Clair, a celebrated professor at Edinburgh^h,

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^c Holler. in coac. Hippoc. p. 594.

^f Nervor. anat. contract.

p. 39, in notis.

^g Brouzet educat. medic. des enfans, Tom. II.

p. 57. ^h Medical essays and observations, Vol. II. art. 18. p. 294,

et seq.

relates the following extraordinary case. A child four years old, was troubled with pains in the stomach; it was subject to an itching of the nostrils, watchings, terrors in its sleep, after which it started up and remained awake; it moreover perpetually rubbed its nose, whether asleep or awake; convulsions followed afterwards, of which it died on the sixth day, many remedies having been tried according to the rules of art, but to no purpose. The intestines being with care dissected in their whole extent, and the stomach opened, no worms appeared; but there were found about two ounces of a viscid substance like a jelly, near the beginning of the jejunum.

It has sometimes been observed, that after the worms were voided, there have remained some symptoms which might be imputed to them. Thus it often happens, that a falling-sickness, occasioned by worms, continues after the worms are gone, if the fits have been frequent and violent. That epileptic disposition continues in the common sensory, so often and so violently disturbed; this is often suspended for a while; but it may be roused and rendered powerful again, not by worms only, but by other antecedent internal causes; see what has been said upon this subject in the chapter concerning the Epilepsy. For since, as will be shewn hereafter, there is occasion for strong purgatives in the cure, it would be by no means safe to exhaust the body any longer with them, if there were no worms remaining, but only some slight symptoms.

§. 1369. **W**ORMS are destroyed, 1. By carrying off the slime in which they nestle, (§. 1361.) by fixed alkalis, by gums which purge phlegm, by mercurials, antimonials, and aromatic bitters.

We have already spoken of the phlegm in which worms nestle, (§. 1361.): but there is a sort of slimy mucus which lubricates the internal surface of the intestines,

testines, that may sometimes be increased, and afford a commodious habitation to worms. Besides, there seems to be secreted from the body of the worm a considerable quantity of a viscid humour, with which it is covered on every side, in order to defend it from the acrimony of the *ingesta*. This mucus, when it exceeds in quantity, is thrown off, and a new mucus is secreted for the same uses. Hence those who are troubled with worms, frequently void slimy excrements.

The method of curing this gluten in the primæ viæ was treated of at §. 75. where we considered those diseases arising from a spontaneous glue. Bitters, saponaceous resolvents, the aromatic stimulating gums which at the same time purge, fixed alkalis, gentle mercurials, and strengthening aromatics are here chiefly of use, forms of which are given in the *Materia Medica* under this aphorism.

It is easy to conceive, that, in the application of these, the age and strength of the patient should be attended to, and that the dose should be increased or diminished as occasion requires.

§. 1370. **A**ND likewise by externally anointing the abdomen with the strongest aromatic balsams, mixed with purgative and oleous ingredients.

Most of the remedies just recommended are bitter; others of them have a nauseous taste, so that it is often very difficult to administer these, especially to children, in such a quantity as can produce any effect. Hence physicians have been obliged to have recourse to external remedies.

Two ointments are sold in most shops, with which, when the abdomen is anointed and warmed, they act with a penetrating force upon the intestines, and often so as to occasion a violent purging. The unguentum Agrippæ, contains very strong purgative ingredients, such as the root of bryony, the juice of wild cucumbers, sea-onions, the root of iris. The other is,

unguentum arthanitæ, otherwise called *Cyclament*, “Ointment of sow-bread;” which besides the roots of sow-bread and wild cucumbers, contains the bitter pith of Coloquintida, ox’s gall, berries of Mezeræum, scammony, euphorbium, aloes, &c. An equal quantity of both these ointments is mixed in the *Materia Medica*, to anoint that part of the belly where the navel is. Most of the remedies, of which these ointments are composed, purge violently; wherefore they cannot be administered internally, even to strong and robust men, without great caution: but from the external use of the more gentle remedies, no cure can be hoped. It is a matter of dispute, whether the stimulating force of these medicines, penetrating the skin, acts immediately upon the intestines under it; or whether, being sucked back by the absorbing veins of the skin, and circulating through the vessels with the other humours of the body, it occasions a purging. Certain it is, that the parts about the navel in young children being rubbed with such ointments, a dangerous over-purging may follow, which may give occasion to a severe bloody flux. Wherefore but little is rubbed on at a time; and when they begin to complain of gripes, prudence directs not to anoint the navel with them any longer, till it appears what effect they produce. But if a copious evacuation should follow, the navel and the skin next it should be immediately washed with Venice soap, lest any leavings of the ointment should continue in the skin, which might increase such disorders.

In the *Materia Medica* at this article, another prescription occurs which contains no purging ingredients, but whose efficacy is chiefly owing to that fragrant aromatic tansy.

§. 1371. 2. **B**Y killing the worms, which is done by medicines prepared with honey, salts, and such things as the worms cannot digest; by bitter aromatics, mercurials, acids, and by vitriol impregnated with steel or copper.

The

The worms of the intestines, whilst alive, seem to be able to stick in such a manner to the sides of the intestines, as not to be driven out of the body by that motion by which the victuals are insensibly protruded to the anus. But the smooth worms more easily and more frequently come out at the anus, especially if they be dead; sometimes too, whilst alive, they grow tired of their habitation, and creep out at the anus; sometimes, also, when they enter the stomach, they are thrown out alive by vomiting. But smooth worms are moveable enough, and it is very probable that they often change their place; nay, at the time of a disease, as was said before, no remedies for the worms being given, when neither the physician nor the patient suspects there are any, they come out of their own accord. Perhaps the humours, collected in the intestines, being changed by the disease, become hurtful to the worms, and force them to change their place. If at that time, when a man is even against his will forced to make a great effort to force out his excrements, some worms do not stick to the sides of the intestine, they will be hurried away with the excrements. But the belly-worm, as was said before, is fixed to the intestine by its small extremity, and sticks firmly: for this reason, it is with the greater difficulty forced out, and it scarce ever comes out entire of its own accord; frequently a considerable part of it broke off, sometimes several ells in length, is forced out, as appears from a considerable number of observations. As the ascarides and cucurbitine worms are very moveable, they often come out at the anus.

But if the death of the worms in the intestines could be brought about, they can then be easily forced out with the rest of the excrements, as they can resist the peristaltic motion of the intestines only when alive. And though the worms, when dead, might still stick to the intestines, they would soon consume away in a moist, warm place, and so that connection would be dissolved.

This was admirably remarked by Aëtius, when, treating of the cure of worms, he says: “ When living,
“ they

“ they catch at the parts which are next them ; but
 “ when dead, they are evacuated with the excre-
 “ ments. But some of them come out still alive, but
 “ disordered ; and, if I may be allowed the expreffion,
 “ half-killed ^a.”

But though the indication of the difeafe directs to kill the worms, the greateft care fhould be taken not to give any thing capable of hurting the ftomach or inteflines. Several remedies are here enumerated, each of which deferves to be particularly confidered.

Medicines prepared with honey.] It is univerfally acknowledged, that there is a diffolving force in honey ; it may therefore be of ufe to diffolve the phlegm, and make it thin. But it is not quite clear whether the honey itfelf is hurtful to worms. It is true indeed, that Aëtius ^b recommended mead for perfons troubled with worms, and directed “ that a great quantity
 “ of honey fhould be thrown into what they drink.” It is worthy of remark, however, that the ancient phyficians thought gall deftructive to worms, even when rubbed externally upon the navel. At the fame time, they maintained that honey is converted into gall in the human body ; efpecially if the patient be of a hot conftitution. Thus in Galen, we meet with what follows concerning honey : *Since with thofe who are in the flower of their age, efpecially if they be of a hot conftitution, and lead a laborious life ; honey is always converted into yellow gall* ^c. In another paffage he confirms this ^d. Perhaps, for this reafon alfo, honey was recommended as a remedy for the worms. However, it may be of fervice in lubricating and purging. More modern phyficians have fince been of opinion, that honey drank in great quantities is deftructive to worms, becaufe it can obftruct what is called the pipes in infects, by which they breathe, and which have been defcribed by Malphigi in the filk-worm. But thofe pipes have not been yet fhewn in human worms,
 and

^a Serm. ix. cap. 39. p. 173.

^b Ibid.

^c Siquidem illis qui jam in flore ætatis funt, potiffimum fi calidiore natura funt, ac vitam degant laboriofam, in iis totum mel vertitur in flavam bilem. *De nat. facult. lib. ii. cap. 8. Charter. Tom. V. p. 45.*

^d De aliment. facult. lib. iii. cap. 39. Charter. Tom. VI. p. 399.

and perhaps they do not breathe, as they are to live in the human intestines, whose cavity is filled by its contents; especially as the intestines in their natural state are contracted, as was said upon another occasion in the chapter concerning Belchings and Flatus.

For the same reason, the use of oil was recommended if given in a large quantity, so as not merely to appoint, but fill the intestines. Thus Aëtius^f ordered a glass of the oil of unripe grapes to be given to the patient, and a great quantity of oil of unripe grapes to be boiled in his ptisan, and he would have “his allowance of oil constantly increased.” The reason he gave for it was: “In general, all remedies that remove worms, either by killing them by their sharpness, bringing them out by their bitterness, irritating them to evacuation, or by the lubricity occasioned by the remedies taken, are known by their efficacy. But they are at the same time, as seems probable, forced out by beverages, which lubricate the passages, or by a quality without a name.” Thus Vegetius^g, with other remedies, mixed a considerable quantity of oil; and he either poured it into the bodies of animals with a horn, or caused it to be injected with a clyster, saying, “Such is the virtue of medicines, and the softness of oil, that it kills the worms in the body, and throws them out.”

But the experiments which have been made, have shewn various effects. The celebrated Lanzoni threw into common oil, a human worm that had been voided alive, which immediately died. He put into honey, a worm that had been thrown up in vomiting, which quickly died^h. Those were smooth worms. But Coulet could not keep cucurbitine worms longer alive in any liquor than in oil of almonds, in which they lived for four and twenty hoursⁱ. I do not know that these experiments were ever tried upon a broad worm, if it came alive and entire out of the body, as it generally died soon after being voided. Many ex-

peri-

^f Serm. ix. cap. 39. p. 173.

^g Art. veterin. lib. i. cap. 44, 45.

^h Script. rei rustic. Tom. II. p. 1065, 1066.

ⁱ Acta phys. med.

^j Nat. curios. Tom. I. obs. 94. p. 173.

^k De ascarid. et lumbrico

ato, p. 31, 33.

periments may be seen in the works of the celebrated Torti^k, from which it appears that round worms have lived very well for several hours in common oil and mead.

I have sometimes made use of a great quantity of honey as well as oil; but I could not by that means kill the broad worm. As these often occasion nausea and vomiting, I have sometimes seen smooth worms thrown out by vomiting; and a great quantity of honey being given, worms sometimes came out at the same time if a looseness followed, as is frequently the case. However, the effect of these was not so certain that one could depend upon them. Whilst the ascarides occasioned a troublesome itching about the anus, I took care to inject frequently with oil and mead; but these expedients disappointed my hopes.

Salts.] It scarce admits of a doubt, that salts, especially the sharper sort, and even the gentler sort if taken in great quantities, may be troublesome to worms: but these cannot be given otherwise than in so moderate a quantity, as not to hurt the intestines; and for that reason, there will be the less ground for hopes that the worms can be much affected by them. But when the salts have at the same time a purging quality, then there is more hopes of their proving beneficial. Wherefore physicians have chiefly recommended Sedley and Ebsam salts, and others of a similar nature.

In order to drive out ascarides, which take up their residence in the intestinum rectum, or a woman's privy parts, Hippocrates^l directed that the parts should be washed with brine.

Such things as the worms cannot digest.] As worms seem to be chiefly nourished by chyle, it scarcely seems possible to find such things as, being eat by worms, can do them a prejudice.

Whilst we consider the chief remedies for worms recommended by authors, they seem to be properly enough divided into three classes. Those of the first class

^k Therapeut special. ad febres, &c. lib. v. cap. 6. p. 510, et seq.
^l De Mulier. Morb. lib. ii. cap. 60. Charter. Tom. VII. p. 832.

class are rough and rugged : and it is hoped from these, that, being moved and pressed by the peristaltic motion of the intestines, they would destroy the tender bodies of the worms, or greatly hurt them, so that the dead, or at least the debilitated worms, may be more easily driven out of the human body. The second class contains such things as diffuse a disagreeable and penetrating stench through the whole tract of the first ways ; being applied in such a manner, that its action may be continued, and not interrupted. The third class contains those things, which, though they can neither hurt the worms by the roughness of their parts, or by a bad smell, yet have been found by experience to prove very destructive to them.

To the first class belongs that remedy prescribed by the celebrated Mead^m, consisting of tin and prepared coral ; equal quantities of which are to be reduced into a fine powder, and made into a bolus with conserve of sea-wormwood, and taken twice a-day. Alstonⁿ gave pure tin in a much larger dose to persons troubled with worms. The very day after purging, he in the morning, when the stomach was empty, gave an ounce of pure tin pulverized and sifted with a sieve made of horse-hair, and having very narrow interstices : he mixed the powder of tin with four ounces of black syrup of the poorest sort, which in the making of sugar remains like a sediment, and hence is called the dregs of sugar. On the day following he gave half an ounce of pulverized tin mixed with two ounces of the same syrup, and he repeated the same dose on the third day ; and the next day a purge was given, prepared of an infusion of the leaves of senna and manna, such as had been given the day before the powder of tin was given. He declares that he has seen this remedy produce the most happy effects, as it immediately eases the pain in the stomach occasioned by the worms ; though the worms do not go out till some days after. This quantity of tin is given to grown men ; in young per-

^m Monit. et præcep. medic. sect. iii. p. 119.
and observat. Vol. V. part 2. p. 89, et seq.

ⁿ Medic. essays

persons, the quantity is diminished according to their age.

But though tin reduced to powder may in many ways be destructive to worms, this celebrated physician was of opinion, that it chiefly acts by the powders getting between the tunics of the stomach and intestines, and the worms; and thus preventing them from sticking to the stomach and intestines, insomuch that a purge being given, they are easily forced out.

Perhaps the filings of iron act in the same manner, if a dram's weight of them be given every morning during several days^o. But though iron is easily enough dissolved, both in our humours and in the liquors we drink, it is highly probable that it acts not only by a mechanical force, but by a medicinal metallic virtue; of which subject we shall soon treat farther.

That product of the sea, which perhaps with many others should be considered as belonging to the animal kingdom, and is sold by the name of coral in shops, seems to have acquired a distinguished reputation amongst remedies for the worms on the same account, namely, because of its mechanical roughness. Certain it is, that Conrad Gesner^p prescribed pounded, but not sifted coral, to kill the worms. It is obvious enough, that other rough powders that are innocent may be tried for the same purpose.

The second class contains those remedies that destroy worms by their bad smell.

Garlick holds a distinguished place amongst these, as it diffuses on every side a smell pretty strong, penetrating, and disagreeable to those that are not accustomed to it. It is easily borne by the human body; and it is well known that many are extremely fond of it, whilst others detest its smell. Horace was one of these who would have garlick, worse than hemlock, given in punishment of parricide; but when he saw the common people eat it without being hurt by it, he made the following exclamation, *O dura mefforum ilia!* "O the strong bowels of reapers!" It has been always loved

^o Van Doeveren de verm. intestin. p. 71.
dic. p. 91.

^p Epistol. Me-

loved by men who led a life of hard labour. A thousand six hundred talents were laid out in garlick, onions, and radishes, for the workmen who were employed in building the pyramids^q. But so penetrating is garlic, that in men who eat it every day, the whole skin, even to the fingers ends, smells of it: nay, when a poultice made of garlic, mallows, &c. was applied to the loins of a person who had a stranguary, his belly being opened immediately after death, a smell of garlic issued from it^r. Hence the virtue of garlic as easily enters by the absorbing veins as it penetrates by the arterial vessels. On account of these penetrating forces of garlic, Galen said: *Therefore I call that eatable the preservative of country people: and if any one should prevent the Thracians, the Gauls, or those that inhabit a cold country, to feed upon it, he would do those people a great injury*^s. In the same place he said that garlic drives away wind: but Hippocrates said of garlic: *It occasions wind by the vehemence of its steam*^t: And elsewhere, *But when you desire to excite wind in the womb, mix a single head of garlic, and the juice of the herb laserpitium, with what you give*^u. But in the chapter concerning Belching and Flatus, it was observed, that carminatives, at the same time that they disperse, produce wind; as they gently irritate the intestines with a mild aromatic stimulus, so they are contracted in many places, which has this effect, that a fixed convulsive affection has somewhere been removed; there then follow murmuring noises in the belly, and afterwards an explosion of wind, either upwards or downwards.

Garlic may therefore be beneficial, not only as its smell is dangerous to worms, but also as, by increa-

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^q Herodot. lib. ii. p. 137.^r Lobb of curing fevers, p. 53.^s Itaque ego agrestium theriaca illud edulium appello. Ac, si quis vel Thracas, vel Gallos, vel denique qui frigidam regionem incolunt, vesci illis vetuerit, non leviter iis hominibus nocuerit. *Meth. Med. lib. xii. cap. 8: Charter. Tom. XII, p. 291.*^t Flatus autem parit, propter spiritus vehementiam. *De Viſtus Rat. lib. ii. cap. 7. Charter. Tom. VI. p. 470.*^u In utero autem cum flatus excitare volueris, allii caput unicum, et laseris succum, adsubidia ad admisceto. *De Infecund. cap. 18. Charter Tom. VII. p. 857.*

ling motion in the fibres of the intestines, it so prevents the sticking of worms to their sides, that they may be the more easily driven out by purgative remedies. The action of the garlic will be more powerful in those that have not always been used to it; for it has less effect upon such as have been accustomed to it. If the sick persons once every day swallow a clove of garlic either entire, if it be a small one, or cut into parts, then the smell of the garlic always continues in the stomach and intestines. The cloves of garlic boiled in vinegar furnish a tolerably agreeable sauce for the table; but then the force of the garlic is more dead. If ascarides should take up their lodging in a woman's privy parts, Hippocrates recommended the thrusting of oblong medicines, composed of things good against the worms, up the part; but he at the same time added, *Let her feed upon boiled and raw garlic, and the ascarides come out and die* ^v.

In such cases *asa fœtida* is recommended, which is of a much worse smell than garlic, especially if it is brought from Asia fresh, and of a white colour, such as I sometimes have happened to see; for then it diffuses a smell almost insupportable: wherefore bags full of asa newly gathered are hung up to the top of the mast; for if they were opened in the vessel, nobody could bear the stink, which is gradually diminished by drying. Yet in Asia *asa fœtida* is reckoned a great dainty, whilst it is mixed with sauces, or dishes are just rubbed with it. With regard to this subject, the reader is referred to *Kæmpfer in amœnitatibus exoticis*. Whence Hoffman ^w used to drive out the brood of worms with his worm-specific, that is to say, pills made of *asa fœtida*, myrrh, saffron, and sweet mercury.

To this class belongs the valerian root, which Fabius Columna ^x would have to be the true phu of Dioscoridis, and found it to have great efficacy in curing the falling-sickness, both in himself and others, if
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^v Et aliis coctis et crudis vescatur, et ascarides exeunt ac moriuntur. *De Mulier. Morb. lib. ii. cap. 70. Charter. Tom. VII. p. 832.*

^w Medic. Ration. System. Tom. III. sect. 1. cap. 5. sect. 32. p. 110.

^x In phytobasano, p. 113,—112. et in Ecphrasi plantar. p. 210.

half a dram of the root ground to powder was taken every morning. The celebrated Marchant^y made trial of this root to cure the falling-sickness, and with good success; but he perceived at the same time that worms were driven out of the body, and that the patients sweated copiously. This root diffuses a very bad smell; and as it acts chiefly by causing sweats; and seldom purges, it seems to be fatal to worms. Storck, celebrated for the invention of many new medicines, in order to drive out worms, joined the valerian root to purgatives and aromatics with great success^z.

For the same or a similar reason, the caput mortuum, which remains after all the volatile parts have by fire been forced out of hartshorn, is praised as an excellent remedy for worms: for the coal remains solid, capable of being crumbled, fetid, bitter, and still defiled by a thick, tenacious, pitchy oil^a.

Perhaps sulphur likewise belongs to this class: for, "if it be received crude into the human body, the dose being divided into portions, and often repeated, it strangely purges the primæ viæ; at length it clears them very powerfully, and then it efficaciously cures certain cutaneous diseases, where worms are in the case, or which are of a metallic and mineral nature^b." I have often given sulphur in this manner: and, though it has scarce any smell of itself, except it is made warm either by friction or by fire, yet whilst it is dissolved in the primæ viæ, either by the force of our humours, or by the food swallowed, excrements of a very bad smell, are voided by stool: so this unusual stink is noxious to the worms?

It does not seem at all improbable that many other discoveries will be made either by chance, or by attentive observations and experiments properly made. The great use of these will excite physicians to investigate these matters more thoroughly.

Next follows the third class, containing those remedies.

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^y Acad. des Sciences, l'an 1706. Mem. p. 430, &c. ^z Ann. medic. secund. p. 228. ^a H. Boerh. chem. Tom. II. processu 120. p. 359. ^b Ibid. p. 419.

medies which have been observed to be destructive to worms, tho' they are neither endued with roughness of parts or a bad smell.

To the third class belong all those remedies which prove destructive to worms, though they have neither roughness of parts, or a bad smell. Galen says, that the "buds and leaves of the peach-tree, have a bitter binding quality; and that its leaves bruised, and applied to the navel, kill worms ^c." Boulduc ^d observes, that an infusion of the flowers and soft leaves of the peach-tree have a gentle purgative quality, and commends it as an excellent remedy for worms in children. It will presently be shewn what should be thought of bitters; and it will appear in the following paragraph, that gentle purgatives are scarce ever sufficient: So that this remedy acts upon the worms by a peculiar virtue.

Galen has likewise observed of fern, "that its roots kills the broad worm, if one drinks four drams of it in water and honey ^e." The observations of the celebrated Marchant ^f confirm the opinion of Galen; for he declares that it is a wonderful and sure remedy for all sorts of worms. It is probable that the worm-medicine, which Andry kept as a secret, was prepared from fern-root. Nor does he deny this, but he pretends that a particular sort of preparation of fern-root is required ^g. After the death of Andry, his son-in-law Dionis ^h endeavoured to persuade the public, that but little fern enters into the composition of this remedy, and that there are many other ingredients in it. But every body knows that the dealers in nostrums are not always to be believed. It becomes a gentleman to prefer the good of the human species to gain: but the *auri sarca fames* often persuades the contrary. I never repented freely communicating to every body any useful secret I might be possessed of; and I am sure I shall not repent it at the time,

Dum.

^c De simplic. rer. facult. lib. vii. n^o 17. Charter. Tom. XIII. p. 209.
^d Acad. Sciences, l'an 1414. Hist. p. 49. ^e De simplic. rer. facult. lib. viii. n^o 39. Charter. Tom. XIII. p. 223.
^f L'acad. des Sciences, l'an 1701. Mem. p. 285. ^g Andry sur la generation de vers, p. 531.
^h De Tania, p. 46.

*Dum numina nobis
Mors instans majora facit.*

Perhaps many other things may have a similar effect. Barrere declares, that scordium ground to powder has often been of use in curing disorders occasioned by worms. There is a considerable catalogue of remedies for the worms, to which recourse may be had^k.

Bitter aromatics.] Such remedies are often beneficial in strengthening the chylopoietic viscera; and they correct a cachectic habit, which is favourable to worms, (§. 1362). But it is not quite certain that bitterness is so fatal to worms.

Galen indeed has written, that worms may be killed by bitters; and afterwards he added, *Wormwood can destroy the smooth worms. The broad worms require stronger remedies; fern is one of these: so does that which is called the ascaris*^l. But it appeared from the observations already laid before the reader, that worms have been frequently found in the duodenum, into which there runs bitter gall by the common channel. It appears from the experiments of the celebrated Redi, that earth-worms as well as human worms live a long time in bitter decoctions; but that they soon die in water sweetened with honey or sugar. Worms have been found not only in the liver where the gall is formed; but even in the gall-bladder of a sheep, which contained most bitter gall, worms swam at their ease^m.

Coulet acknowledges, "That he never found any liquid bitter enough to destroy worms by bitterness; on the contrary, he always found them more active, and better able to live in such fluidsⁿ." He adds, however, that worms cannot live longer in bitter liquids than in pure water. Smooth worms taken out of the intestines of a calf just killed, and being

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ⁱ Observat. anatom. &c. p. 170.

^k Andry sur la generation

des vers, p. 609; et seq. Le Clerc histor. lumbr. lat. p. 408, et seq.

^l At teretes quidem absinthium perimere potest. Lati vehementiora remedia desiderant, cujusmodi est filix; pari modo et quæ ascaris dicitur.

Metb. Med. lib. xiv. cap. ult. Charter. Tom. X. p. 343.

^m Le Clerc histor. lumbr. lat. p. 94.

ⁿ Tractat. de ascar-

rid. et lumbric. lat. p. 32, 33.

immersed in ox's gall, have lived for about nine hours. These worms have lived in good case so long in the most bitter infusions of aloes and colocintida, as likewise in infusions of bark, that the celebrated Tortio, tired of this delay, took the worms out of these liquids, and threw them into spirit of wine; in which they were immediately killed. But they could easily bear even the juice of garlick diluted with water. What has been said seems to be sufficient to prove, that worms are not so easily killed by bitter aromatics as many have imagined.

Mercurials.] As quicksilver, dissolved in any fat substance, has been found of great service in destroying worms in the skin, it has been thought, that it might likewise be of use in destroying worms in the intestines. Some, following the advice of Brassavolus, have given a few grains of unprepared mercury to children; and this is said to have been attended with good success^P. However, it may be reasonably doubted whether so little quicksilver can kill worms: for it would be by no means safe to repeat such doses at that tender age. Nay, it does not seem to be altogether certain that quicksilver is so fatal to worms. That excellent physician and great proficient in natural history, Scopoli^e, observed, that worms in the intestines are no where found more frequent, or in greater numbers, than near mines of quicksilver: "No age nor sex is to be found free from them." Yet those people live in an air defiled by quicksilver, rendered volatile by fire, and are often injured by such exhalations; besides, quicksilver swallowed, even in a considerable quantity, frequently comes out by stool.

Others have been of opinion, that if water bubbles up with quicksilver, or is digested with it, it acquires great force against worms; and that therefore, if such water be drank, it will quickly destroy them: "By a little of such innocent drink, all worms are killed, as well in the intestines as elsewhere; even in ulcers,

^P Therapeut. spec. febr. lib. v. cap. 6. p. 510, 511. ^P Herman. Kan diss. de argento vivo, p. 14. ^Q De Hydrargyro Idri ensi, p. 55.

cers, if that water be poured upon them." This Helmontius asserts^r. Hence many have imagined, that something comes from quicksilver in water. Which opinion was adopted by the celebrated Hoffmann: "Even common water alone, on account of that exceeding subtil salt which resides in all its pores, at length rubs parts off, after having been a long time boiled with quicksilver; wherefore it is not unusual with practitioners to prescribe this decoction in the venereal disease, and to drive out worms^s." Nay, Dionis^t declares, that he has seen patients, who had long drank mercurial water, seized with a sudden trembling of all their limbs; as often happens to those who have indiscreetly made use of crude mercury; or who have been long exposed to mercurial exhalations, as is often observed in gilders. Heister^u has remarked, that pigeons troubled with worms have been cured by drinking water in which there was a mixture of quicksilver.

Experiments have been tried^v in order to discover whether quicksilver communicated any thing to pure water, in infusion, chemical digestion, or by boiling, and it was concluded that the quicksilver lost nothing: for as the waters which are usually drank are seldom entirely without salt; and we now know that mercury is not only dissolved in acids, but is affected by alkaline and neutral salts; it is no wonder if something is communicated to such water by mercury: but at the same time mercury does not seem to be any way affected by pure water. Helmont likewise believes this; who affirms, that water acquires a power of destroying worms, if quicksilver be steeped in it; especially if it begins to bubble: "For this sort of water, though it does not suck in the smallest particle of the quicksilver, or convert it to its own nature, it however borrows the property, though not the substance."

^r In fine capituli, *Sextaplex digestio alimenti humani*, p. 180.

^s Me-

dic. Ration. et System. Tom. II. cap. 6. p. 261, 262.

^t Dis-

fertat. sur le tania, p. 45, et seq.

^u Wahrnehm. n^o 200. p. 352.

^v Institut. Bonon. Tom. II. part. 1. p. 118. part. 2. p. 117.

“ stance of quicksilver: so that such water being
 “ drank, kills all worms and ascarides, even those
 “ which reside where that drink never penetrated; for
 “ it is soon totally converted into urine. Thus a
 “ single ounce of quicksilver is capable of tincturing a
 “ measure of water a thousand times over, and yet
 “ retain its former weight and properties, &c. For
 “ this is effected without the quicksilver’s any way
 “ suffering, without either its diminution, mutation,
 “ weakening, or alteration^w.” He afterwards en-
 larges more fully upon this.

We must own that there are remedies, which, with-
 out any sensible loss of weight, communicate to the
 liquids into which they are poured, such a medicinal
 force as discomposes the whole body in a surprising
 manner. Glass and regulus of antimony, when in-
 fused in wine, are neither changed, nor do they suffer
 any sensible loss of weight; nor is the flavour, colour,
 or smell of the wine changed: and yet if two ounces
 of such antimonial wines are given to a man in the
 most perfect state of health, they unbinge his whole
 frame, and cause him to evacuate upwards and down-
 wards.

Whence it appears, that surprising virtues may be
 communicated to liquids, when they are infused or
 boiled down with things of a metallic nature. It can-
 be determined only by careful and reiterated experi-
 ments what we may hope from this remedy. “ Torti
 “ by force plunged a worm in quicksilver, which e-
 “ merged, being sometimes loaded with a little grain
 “ of quicksilver; to this, after a time, plain water
 “ was added, strengthened as much as possible by the
 “ stirring of the mercury which was there before, by
 “ which the worm was secured from the immediate
 “ contact of the air, and from injury.” But as the
 worm lived nine hours and more, Torti, tired of the
 delay, plunged it in spirits of wine and killed it.

However, it will appear under the following apho-
 rism,

^w In capitulo, *In verbis, herbis, et lapidibus, est magna virtus*.
 p. 459. * Therapeut. special. feb. lib. 5. cap. 6. p. 510.
 511.

trism, that preparations of mercury expel worms out of the human body.

Acids.] It is very certain that strong and corroding acids hurt worms; but the stomach and intestines cannot bear such remedies, except they are diluted in a great quantity of water, and then they lose much of their anthelmintic power. Van Doeveren observes, that vinegar quickly destroys earth-worms, and gives a kind of liveliness to human worms^y. But this liveliness and alacrity is known by the lively motion of the worms at the time that vinegar is poured upon them; and therefore it might with some probability be concluded, that human worms are not refreshed, but put to pain by vinegar, which their restless motion testifies. Torti^z has likewise observed concerning earth-worms, that they immediately die if they are thrown into vinegar^a. But a smooth worm taken out of a calf remained during six hours in vinegar before it died. Vinegar therefore seems to be dangerous to worms; and perhaps operates so as that by the restless motion the worms may be kept from sticking to the intestines, and so may be forced out the more easily. In Amatus^b a worm-powder is described, to which he ascribes great efficacy: it consists of two parts of sea-moss and worm-feed, and one part of white dittany, bistort, and tormentil-roots. These reduced to a powder, were moistened with sharp vinegar, and then dried in the shade. The dose was from one to three drams, according to the different degrees of strength and of the disease. It is well known in chemistry, that, after drying, the moist acid part of the vinegar remains. Boerhaave^c took saffron and myrrh; on these he poured twenty times the quantity of vinegar from the strongest wine in a high chemical phial; he boiled it during twelve hours; by percolation after boiling he separated the vinegar, rich with the strength of the ingredients, from the subsiding dregs; upon the remainder he poured one half of the former quantity,

^y De verm. intest. p. 68.

cap. 6. p. 512.

curat. 27. p. 354.

^z Therapeut. special. feb. lib. v.

^a Ibid. p. 510.

^b Curat. Medic. cent. 3.

^c Chem. Tom. II. process. 81. p. 277.

tity, and boiled it as before; by distilling over a gentle fire those two tinctures mixed together, he thickened it till it equalled the remainder of the third part, and thus the acid of the vinegar remained sufficiently concentrated and impregnated with the strength of the ingredients. He highly commends this medicine, where a putrid matter, a felid bile, or worms, infest the primæ viæ. The dose is from one to three drams, taken in mead, honey and water, or any sweet wine, in the morning fasting. I have often known this medicine highly beneficial.

Vitriol impregnated with steel.] It was observed above, that the filings of iron are beneficial to persons troubled with worms, as by the roughness of their parts they must prove hurtful to those insects. Now it is well known, that iron is very easily dissolved in our humours, and that the dust of it is very good for sick women; nay, more than that sort of dust of iron which is prepared by art and labour^c. Thus if the filings of iron be dissolved in oil of vitriol diluted with water, the vitriolum Martis of the shops is prepared. If a dram of this be dissolved in a pound of pure water, and drank upon an empty stomach, “it opens, relaxes, purges, promotes urine, destroys worms, and brings them away; it stains the excrements with a black hue, forms them into a matter like clay, strengthens the fibres, and thus cures many different distempers^f.” This quantity is given to grown persons, a smaller quantity is given to young persons. In some it occasions qualms; but these are easily borne, and the malignant flavour of the vitriolum Martis may be easily sweetened by a certain syrup sold in the shops: but as it stains the excrements with a black hue, if this remedy be taken for three or four days successively, the whole tract of the intestines is tinctured with the flavour of vitriol, and so are all the liquids that are swallowed, or that being separated from the viscera are carried into the intestines. It very surely and expeditiously kills the worms in the stomach, and then they are generally driven out soon after by vomiting. It

d Ibid. p. 278.

e Ibid. p. 440.

f Ibid. p. 439.

It has sometimes been observed, that, when filings of iron have been given, the worms have come out stained with a colour like that of iron. Iron dissolved in a vegetable acid^s furnishes a milder remedy, and equally efficacious.

Or copper.] All remedies prepared from copper are to be used with great caution. The vitriolum Martis prepared with a most powerful acid, namely, the oil of vitriol, is administered with safety, and a considerable quantity of it can be borne by the human body, as was said a while ago: but copper dissolved in a vegetable acid, which is much milder, cannot be given internally without the greatest caution imaginable, and is always attended with danger. It is well known what mischief has been caused by boiling meat in rusty pots. I have known very good and pure wine, when kept in a silver cup, covered at top, produce very bad consequences when drank; but this was not occasioned by the silver, but by the copper, of which there is always a certain quantity in utensils made of silver. For the internal surface of that silver cup was found covered over with rust, when the cause of this mischief was inquired into.

At the same time, copper dissolved in acids furnishes a sure poison for insects: "A solution of copper in aqua fortis, if it be diluted with much water, quickly kills lice, fleas, and crab-lice^h." I have known insects which have taken up their residence in the hollows of the forehead, and which occasioned grievous headaches, killed and driven out, whilst a grain of that sort of vitriol, which partakes of the nature of copper, being dissolved in half an ounce of water, was sucked in at the nostrils.

Copper dissolved in volatile, alkaline salts, and even in neutral salts, acts more gently. Wherefore that bluish tincture, which is prepared of the full brine of ammoniac salt, and the filings of copper, has been recommended as a remedy against the falling-sickness in children. It is well known that fits of the falling-sickness are frequently occasioned by worms:

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^s Ibid. p. 44.

^h Ibid. processu 120. p. 477.

“ A few little drops given to them in mead when fasting, by a gentle motion, promoting stool, occasioning qualms, in a surprising manner change sluggish, tender stomachs; these they excite, water and phlegm they bring out, and they kill worms ¹.” The same celebrated author ^k has observed that some distilled waters are endued with a power of destroying worms, because they contain dissolved copper; for whilst he gives an accurate description of the method of preparing distilled waters from fragrant plants, he observes that there at first comes out a water which appears white, thick, odorous, well tasted, frothy, and troubled, which should be kept for medicinal uses. If the distilling be continued, there follows another water, which is pellucid, subtile, without the true smell of a plant, without the natural taste of a plant, but almost acid. If the hollow surface of a brass still be imperfectly tinned, then the last-mentioned water eats through the copper: it sometimes turns green; and being nauseous, vomitive, and invenomed, comes from those who make use of it, especially weak persons and children, both upwards and downwards, with violent gripes, and disordering of the belly. Then this water acquires a power of destroying worms; but it derives it only from the dissolved copper, which the experiments of Torti ^l shew to be very destructive to worms. He observed that smooth worms taken out of a calf, when thrown into an infusion of green brass, soon made very observable motions and contortions; not near so much in other fluids: however, they lived pretty long in that infusion of rust. But the worms were so agitated when they were immersed in this infusion, “ that more than once recourse was had to the infusion of green brass, as a touch-stone to discover whether a worm, concerning which there was some doubt whether it was living or dead (which is not always easily distinguishable in these insects), was really alive:” for if the worm was not quite dead, it immediately made some motion.

Van

ⁱ Ibid. p. 476.^k Ibid. processu 15. p. 71.^l Therapeut.

spec. feb. lib. v. cap. 6. p. 510, 511.

Van Doeveren^m saw surprising effects arise from the spirit of common juniper; which so often tempts the common people of Holland to excess: and he for this reason doubts whether it does not act by some virtue peculiar to itself. A fermented spirit prepared from corn is distilled with juniper-berries, whose fragrance, added to the spirit of corn, furnishes that spirit which is called spirit of juniper. But the quality which destroys worms does not seem to arise from the juniper. The experiments of Tortiⁿ have shewn, that the smooth worms found in calves are immediately killed in spirit of wine: scarce were the earth-worms touched by the spirit of wine, but they died that instant. Wherefore the spirit of corn seems to hurt the worms more and sooner than the aromatic quality of juniper. Whence Torti drew the following inferences: "When worms of both sorts were observed to die first in spirit of wine, then in vinegar, and lastly in wine itself, it seems reasonable to conjecture that there is in wine, and other liquors composed of wine, especially in their spirituous part, something that is pernicious to insects of this nature, that stupefies, inebriates, and at last kills them; just as hens (as is known even to the vulgar), that have fed upon corn tinged with spirit of wine, sometimes fall down upon the ground as if they were almost dead." Van Doeveren was of opinion, that the spirit of juniper acts upon the phlegm, the receptacle of the worms; but it seems rather to hurt the worms themselves. This seems likewise to be confirmed by a physical observation, which we meet with in Baglivi, upon the almost epidemical nature of malignant and putrid fevers, which were so rife in the last year of last century at Todi. All the diseased voided smooth worms in great quantities: "These living worms being thrown into wine, died instantaneously: in oil, water sweetened with sugar, spirit of wine, and the juice of lemons, they lived many hours and many days. Such persons affected with

VOL. XIV. L 1 " this

^m Dissertat. de verm. intestin. p. 69.
ⁿ Ibid. p. 512.

ⁿ See the passage just

“ this disease as drank wine, were almost all cured^p.” In the worm-fever common in camps, I have known wine, and above all the vinous serum of milk, prove highly beneficial when drank in large quantities. If such worms stick in the stomach, they are immediately affected by these liquors.

But we find in the observations of Torti, who examined the smooth round worms, that they were soonest dispatched in spirit of wine, next in vinegar, and slowest of all in wine: it therefore seems surprising, that smooth human worms have been quickly destroyed in wine, and have been able to live hours, nay whole days, in vinegar and spirit of wine. Was he guilty of any negligence in trying his experiments? Or is the diversity of nature in the smooth worms of calves and human worms the cause of this?

But as neither wine in considerable quantities, nor the spirit of wine, can be borne by young children, it is evident that nothing can be expected from these remedies, except in grown persons.

It appeared from the observations of Coulet^q, that human worms can bear a very intense heat; but that they are immediately killed by ice, or extreme cold water which is not yet frozen. Many are fond of ice; and the stomach of such as are used to it seems to be able to bear it: but it is always dangerous to fill the stomach all at once with very cold water, which might indeed hurt the worms that stick in the stomach; but the water will certainly lose that degree of coldness before it can come to the intestines, and for that reason will not be able to hurt the worms of the intestines. Some have advised to inject with a clyster of cold water; but neither could this penetrate to the small guts, for the little valve of the colon prevents it. Perhaps the ascarides which stick about the extremity of the intestinum rectum, and sometimes occasion an insupportable itching, might be killed by applying ice to the anus: but those active worms, as soon as they feel a troublesome degree of cold, can easily find a safer place.

But many prescriptions are to be met with in the

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Materia Medica at this article, which are usually made use of to kill worms chiefly in children; according to which receipts many similar remedies may be prepared. Perhaps either by accident, or the industry of physicians, other remedies against the worms, of still greater efficacy, may be discovered, which may have a power of killing worms, without hurting the stomach or intestines: for the remedies hitherto discovered have not yet shewn such an efficacy as can be thoroughly depended upon for killing worms. The celebrated Homberg^r saw a lad who was healthy in all other respects, who during four or five years voided every day a great quantity of worms, which were five or six inches in length; he once or twice voided a piece of a belly-worm an ell and a half in length; so that it seems probable, that the other worms which he voided were of the nature of those called cucurbitine. He abstained totally from fallads and fruit, and he had recourse to all the remedies against worms then known, but to no purpose.

I am inclined to think, that every practitioner in physic has often lamented his ill success in killing worms. Worms have often been driven out alive or dead by purgatives, whether simple, or mixed with such things as are thought to be hurtful to worms; of this method of cure we are now to speak.

§. 1372. 3. **B**Y expelling the worms both living and dead, by bitter purgatives, by phlegmagogues, and mercurials.

Purging remedies have always held the most distinguished place among remedies against worms, as it is not a matter of great importance whether the worms be alive or dead, provided they be driven out of the body, and this can be effected with safety. If, by the remedies enumerated in the preceding paragraph, worms can be killed, or at least so weakened as not to be able to stick fast to the intestines, they can be the more easily driven out by purging remedies.

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Hip-

Hippocrates made use of purging remedies to drive the broad worm out of the body. Thus he expresses himself, (as before quoted): “ If a person that attends
 “ one troubled with a worm, gives him either a medicine or a potion, if the man has been properly prepared, it comes out entire like a round globe, and
 “ the man recovers^a.” He afterwards adds, that if a part extended into the rectum be broken off of the worm, being two or three cubits in length, or much longer, then the man is not cured; and indeed frequently there are no symptoms discovered in the excrements, but the worm afterwards grows. These particulars answer exactly to the observations of the moderns. For whilst the broad worm is forced out entire, it always appears rolled up in a bottom, and it has at the same time a small extremity which ends in a top shaped like a globe; which is now-a-days generally called the thread of the broad worm. Andry^b has given a representation of the broad worm thus rolled up.

It is known to all who are but moderately versed in the writings of Hippocrates, that *φαρμακον* and *φαρμακυσιν* are expressions which he does not use in speaking of all remedies, but chiefly in speaking of purging remedies. It is at the same time certain that the purgatives of the ancients were very strong; for they frequently made use of hellebore, Cnidian grains, and preparations of the juice of wild cucumbers. Thus Hippocrates^c acknowledges, with regard to Scamander, who died in convulsions upon the eighth day after he was first attacked by them, that he might have held out longer if he had not taken strong physic, which purged away the pure bile. Other similar instances are to be met with^d; chiefly the case of a strong, healthy woman, who, having taken a pill when lying-in, was seized with a pain in the belly, and gripes in the bowels; she swelled, she vomited blood, but not in great quantities; her disorder was so severe, that in five days time she was thought to be dead.

^a De Morbis, lib. iv. cap. 15. Charter. Tom. VII. p. 614. ^b Sur la generat. des vers, p. 33. ^c Epidem. lib. v. textu 10. Charter. Tom. IX. p. 336. ^d Ibid. textu 25, et seq. p. 342, 343.

dead. Thirty firkins of cold water were to be poured upon her body, which was the only thing that seemed likely to give her any relief, as a great quantity of bile had afterwards been voided downwards. She lived notwithstanding.

It will be easily believed, that when so much disorder is occasioned in the body, even the broad worm cannot resist it. Hence the ancient physicians used great caution before they gave a purging remedy: *When a physician desires to purge bodies, he should make them fit to be persuaded* ^c. See what has been said upon this subject at §. 605, n^o 13. For this reason, Hippocrates, at the same time that he advises to attempt driving out the broad worm, directs that the body should be well prepared before any strong physic be given. Bathing, soft food, and repose, were thought necessary for those that were to take hellebore. A young man, who was troubled with a virulent gonorrhœa, had the orifice of his urinary passage covered over with warts; when he came to me for relief, I gave him a strong purge composed of turbith-mineral, scammony, and jalap. He was violently purged by this remedy; the gonorrhœa grew better; the warts being become shrivelled and flaccid, fell off themselves a few days after. But he, at the same time, shewed me a broad worm entire, with its thread, which had been driven out by the force of the physic. He knew that he had a broad worm; but being uneasy about his venereal disorder alone, he did not mention it to me. He acknowledged that he had taken many remedies for the worms, but to no purpose. I afterwards tried a similar remedy sometimes with success. As it greatly disorders the body, I gave it twice in a month; scarce was it taken three times, when the worm came out entire.

If the purging silver of Boyle or Angelus Sala, be prepared carefully by art^f; and two grains of it be pounded very small in a glass mortar, with six grains of loaf

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^c Quum quis corpora purgare velit, ea meabilia facere oportet. Hipp. Aphor. 9. sect. 2. Charter. Tom. IX. p. 49.

^f H. Boerh. chem. Tom. II. p. 467, 468.

sugar; and they then, with ten grains of paste, be formed into pills; and these be swallowed by a grown man when fasting, who is at the same time to drink four or six ounces of warm honey and water; a purging by stool follows: “ It kills broad worms, belly-
 “ worms, and ascarides. Excessive use of it should
 “ be refrained from; too large a dose should be
 “ refrained from: it always gnaws and weakens,
 “ the stomach chiefly. Juniper-berries boiled and
 “ thickened into a consistence with sugar and honey,
 “ cure this disorder.

The celebrated Boulduc ^s, examining the herb called hedge-hyssop, which is reckoned amongst the most powerful medicines, purges away the watery humours, and causes great evacuations both upwards and downwards, when it is taken either in substance or an infusion, found that this little plant has a surprising power of destroying worms; especially if it be poured into fresh milk, for then it acts more gently. In America, they prepare a decoction of the *Spigelia Linnæi*, which is so poisonous that the French have given it the name of *Brainvillers*, a woman famous for poisoning. It causes evacuations both upwards and downwards, and fails not to drive out the worms. But as disorders occasioned by worms are there very common, they prepare a syrup of this decoction, that in every season of the year they may have an efficacious remedy for this disease at hand. This I heard from a witness worthy of credit. But Patrick Brown^h speaks advantageously of the certainty of the virtue of this plant in killing worms; but he declares that it causes sleep like opium. At the same time he gives us to understand, that after this remedy has been administered, a gentle purge, of an infusion of senna, rhubarb, and manna, &c. should be given.

It is obvious enough, that all these strong purging remedies cannot be given without the utmost caution, and can scarce ever be administered to tender children. But there are milder purgatives which have great effi-

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^s Acad. des Sciences, l'an 1705. Mem. p. 246.

^h Civil and natural history of Jamaica in three parts, in folio, London, 1756, p. 156.

Car. Linnæi amœn. acad. Tom. V. p. 140.

cacy notwithstanding. Jalap, a well known purgative, and frequently used by the vulgar, furnishes us a remedy. Of this, Wepfer says, "I learned first by accident, and then by reiterated experiments, that few things drive out broad worms better than jalapⁱ." A scruple weight of the gum of jalap, having been given to a dog six months old, which was afterwards dissected alive, symptoms of inflammation were found in its stomach and intestines^k; but this seems less to be apprehended from the powder of jalap-root, which I rather chuse to use than its gum, which is extremely tenacious, and easily sticks to the surface of the stomach and intestines, and then often occasions gripes and over-violent purging. But as such a jalap root is chosen as has resinous streaks, hence I take the precaution to have its root pounded in a glass mortar, with half the quantity of pure, dry sugar; for thus the resinous tenaciousness which occasions the most apprehensions, is broken. A woman of forty years of age, who, when the time of her courses was approaching, was accustomed to void cucurbitine worms, which were very lively, had also a year before voided some ells of broad worm by stool, so that there could be no doubt of her having a broad worm. I tried the most noted remedies for the worms; she had long used copper dissolved in the brine of sal ammoniac, but without effect. Her feet, her legs, her thighs, and at last her belly, began to swell. When she was weak and languid, I gave her half a dram of jalap root long pounded with sugar, and she soon after voided a broad worm almost six ells long, which was alive and moved with alacrity. She however afterwards died of a lingering dropfy.

It has sometimes been found beneficial to fill the whole intestinal tube for several days with rank vapours, which are thought to be destructive to worms, these have been treated of in the foregoing paragraph. Thus, for example, during three or four days, I gave a few grains of asa foetida to be swallowed three or four times a-day, and afterwards I gave a pretty strong
 purge,

ⁱ Cicut. aquat. histor. et noxz, cap. 15. p. 224.

^k Ibid. p. 222.

purge, always taking into consideration the strength and age of the patient. This method often proved successful.

Others chose rather to mix remedies for the worms with purging draughts, that these things, which are hurtful to the worms, may be carried the more quickly through the whole tract of the intestines. I sometimes found this produce good effects, and many observations confirm its efficacy¹. De Lille^m declares, "That the extract of black hellebore, with the vitriol of Mars," never proved unsuccessful, when all other remedies for the worms had failed: "Out of sal polychrest, jalap, and valerian, taken in the quantity of a dram, with the addition of an ounce of oxymel of squills, four ounces and a half of Winter's bark, and two pounds weight of generous wine," Stork made up a remedy, of which four ounces a-day were given to grown persons; but only a dram or twoⁿ to children, with equally happy success. In this remedy, there are ingredients which attenuate the phlegm, the receptacle of worms; others which are thought to be destructive to worms; and the root of jalap, which purges.

From all these particulars, it seems to be evident, that the cure of diseases occasioned by worms is chiefly to be hoped from purging remedies. The remedies which are praised as discoveries, and which have been often approved of for their happy effects, were chiefly things which unhinge the body, and cause evacuations upwards and downwards.

The remedy discovered by Mr. Herrenschwand, which has not been yet made public, and concerning which we know the particulars which follow, seems to belong to this class^o. There are four powders; the first of which is taken the day before the medicine is taken, as a preparatory remedy. A light supper is allowed the patient; and whilst he prepares for bed, two spoonfuls of the oil of almonds or olives is given him.

¹ Acta physio. med. natur. curios. Vol. IX. obs. 14. p. 41. ^m De palpitat. cord. p. 255. ⁿ Ann. medic. secund. p. 228, 286.
^o Bibl. raison. Tom. XXXII. October, November, December, 1781.

him. On the next morning, the patient, whilst his stomach is empty, takes the first dose of the specific remedy, which usually twice causes a slight vomiting, and as many evacuations by stool: these latter always follow, but the vomiting not always; it seems to be occasioned by the motion of the broad worm. In the space of two hours, both the vomiting and the evacuations by stool discontinue; then broth is given to the patient. This done, the second dose is given: this has just the same effect with the first; but generally the broad worm is voided, so that there is not always any occasion for a third dose. But if the worm has not yet been voided, after a third dose it does not fail to come out sooner or later, often alive, and always entire, with its thread. Nor is the patient more fatigued with this remedy, than by any other purging remedy. The inventor of this remedy declares, that he has given it three and twenty times, and always with equal success, to patients of different sexes, constitutions, and ages, even to the tender and delicate.

All this was afterwards confirmed by the observations of other physicians.

The worthy inventor wrote to me the same effect, in several very polite letters; and added, that, in two hundred cases, the remedy failed but eight or nine times. He then expressed himself as follows: "All the sick were thus cured among the Swiss about Geneva, Neufchatel, de Biena, and de Mont; nor during two years and a half that he gave this specific, did any patient return complaining of this worm: he heard however, that it had returned in Holland, after this specific, which purges violently both upwards and downwards, had been used. He twice saw two broad worms voided by the same person, whose disorder was very severe. Many patients voided at the same time both smooth worms and ascarides. He keeps by him the colon of a dog, to the villous coat of which there stuck, in a space equal to that of a crown piece, two complete worms, and three threads besides, each of which was fixed to a particular spot of the villous coat."

Bon-

Bonnet^P, so much celebrated for his knowledge of natural history, and of other sciences, speaks of this specific remedy for the belly-worm. It is a light powder, exceeding subtile, and of an olive colour, which seems to belong to the vegetable kingdom; in it there appear to the naked eye, and still more through a glass, shining particles; it smells of saffron, and has a flavour somewhat saltish. On the day before this specific is administered, he at four o'clock in the afternoon, gives, in warm water, six grains of a white dust, which contains *vitriolum martis*, nor is any sensible effect occasioned by it. This powder is not however absolutely necessary to effect the cure. At seven o'clock, a light supper is given; two hours after, a spoonful of oil of almonds or olives is given. The next day there is a powder given every two hours, which in weight equals a dram or four scruples; the quantity being either increased or diminished, according to the different degrees of strength in the patient. There are never more than three doses given. Sometimes the first dose produces no effect; sometimes it causes a slight vomiting; there often follows an evacuation by stool; then broth is given. If the worm does not come out, as is generally the case, a second dose is given, and even a third if there be occasion for it. But this remedy does not operate without putting the patient to some pain. For sometimes it purges violently both upwards and downwards, gripes are felt in the bowels, and the pulse beats high. Sometimes the remedy operates much more gently. The belly-worm is frequently voided in the afternoon; at the latest, it is voided the next day either night or morning. It happened four times at Geneva, that the belly-worm was voided after taking the first dose. If it should happen to be of a considerable length, the patients feel the same pains as are felt by persons in a dropsy after they have been tapped, that the water may come out, except the belly be properly strengthened. Some languish for a day or two, others are seized with

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^P Mem. de mathem. et de phys. present. a l'acad. royale de sciences, Tom. I. p. 479.

a fever; others are so little affected by this remedy, that they are able to go out the same day.

As it happened twice at Geneva, that no worm was voided upon taking the remedy, though perhaps it had before been voided by the patients unknown to themselves, in order to be certain that there is a belly-worm in the case, he gives half an ounce of the syrup of peach-flowers; for if there then come out with the excrements, grains or little white lumps, which he looks upon as the excrements of the belly-worm, he thinks that there can be no doubt that there is one in the body.

But whilst Herrenschwand administered his remedy at Basil, he was surprised that the broad worm never came out entire, but always bit by bit. But those belly-worms belong to the second species of *Platerus*, which he takes to be more difficult to force out than others.

But that preparatory powder, which is taken the day before the remedy is administered, though it is not absolutely necessary, is thought to have a good effect in making the specific act better and more expeditiously the day following. Van Doeveren declares, that Herrenschwand assured him, " That his remedy was
 " not suited to that species of belly-worm, which,
 " when it takes up its residence, drops out pieces of
 " itself, resembling cucurbitine worms in form, as it
 " can very seldom force out this; but that only that
 " other species which does not drop out pieces of it-
 " self, and which seems to be of our second class
 " (with short joints), is constantly driven out by it ^a." At the same time, he proves, by many observations, that that remedy is not so gentle and mild, but often occasions great disorder in the body. In the *Materia Medica* at this article, there are many prescriptions of purging remedies for young persons.

§. 1373. **N**OR are clysters, suppositories, and ointments externally applied, of less service.

The

^a Dissertat. de verm. intest. p. 73, 74.

The use of external ointments was treated of at §. 1370.

Suppositories are generally prepared of bitter things, and such things as are thought to be most destructive to ascarides; but, as has been already observed, these worms, as they are very lively, soon go to a different place, if they find any thing disagreeable at the extremity of the intestinum rectum. Suppositories purge either by their bulk or their stimulating quality, whilst they irritate the intestinum rectum. Clysters too do not reach to the small guts; and for that reason, they can hurt only those worms which take up their residence in the great guts. They are likewise useful in this respect, that purgatives may be given to peevish children by means of a clyster, which if they be given in a triple dose produce the same effect as if a simple dose of a purging remedy had been swallowed.

But physicians have recommended clysters upon another account, namely, to make the worms change their place. They gave bitter potions to be drank, and at the same time took care to have milk injected at the anus, in hopes that the worms, abhorring bitters, might be allured by the smell of the milk, to quit the stomach and small guts, and descend into the great guts, that so they might be the more easily killed by other clysters, or more expeditiously driven out by purging remedies.

Nay, Duretus was of opinion^a, that the worms must necessarily die by change of place alone, as they live upon chyle, which he would not allow to be ever found in the great guts. Thus he expresses himself: “Which
“ is the reason why skilful physicians give bitter po-
“ tions, especially those composed of water-german-
“ der, and inject with milk, that being on one hand
“ driven away, and on the other allured, they may
“ leave the jejunum, and descend into the colon,
“ where they cannot even stay a second without lo-
“ sing their lives. For all things which live and move
“ are preserved in their peculiar place, and there they
“ receive the nourishment which supports them.”

At

^a In coac. Hippoc. p. 174.

At the same time, it is certain, that the contents of the great guts are not entirely destitute of chyle, as anatomy has discovered lacteal vessels which absorb the chyle as far as the intestinum rectum. Besides, it appears from what has been already said, that bitter things are not so destructive to worms as is generally thought; and that living worms are found in the great guts, not round worms and ascarides only, but even the belly-worm; and Herrenschwand found not one only, but several, in the colon, as was observed in the foregoing paragraph.

But in the *Materia Medica*, there are many prescriptions of clysters and suppositories, consisting of various remedies against the worms; and many of the like nature may be made upon the model of these.

§. 1374. **W**HEN the teeth are cutting, especially the incisorii, or fore-teeth, there arises an inflammation, swelling, gangrene, convulsion, green stools, a salivation, a fever, and even death, from the tension, puncture, and laceration of the gums, which are furnished with a number of nerves and blood-vessels.

It appears from the observations of Eustachius^a that there are seen in new-born children, when both jaws are dissected, teeth partly slimy, partly bony, whose magnitude can be easily discerned by the eye, fortified round with a sort of fences, which will afterwards force their way out. These teeth being drawn out by a skilful hand, a very narrow interstice scarce converted into bone appears; which being removed with equal care, teeth occur, which are almost entirely slime, and much less in size, which lie hidden in their peculiar cavities, behind the others mentioned before. Those last generally come out about the seventh year, a little sooner or later, when the first have fallen. So that ocular inspection shews, that the teeth which shoot out about the seventh year are no

way joined with the former, and cannot even touch them, as there is a bony interstice between both, which separates the first and the second tooth from each other; which being afterwards perforated, the second tooth will force its way out at the proper time.

So that the notion, that the second tooth springs from the root of the former which is left behind, falls to the ground ^b. And the celebrated Albinus ^c found the first and second teeth, not only in children newly born, but even in embryos: but then they were not at that time separated by a bony hedge. I have sometimes observed the same thing in abortions.

But a great diversity is observed in the time when the teeth come out. It is generally agreed, that the teeth begin to grow about the seventh month; but it sometimes happens, and I myself have known instances of it, that a tooth or two is to be seen in the jaws of children just born; nay, in an abortion of five months, I saw two fore-teeth which plainly grew out of the lower jaw. On the other hand, in a healthy, vigorous, and plump girl, the first tooth came out in the nineteenth month, the others following very speedily, and without causing any pain. In the weak and sickly, the teeth sometimes begin to grow somewhat later. From these observations it appears, that, even in the course of nature, the first teeth begin to grow at different times in different children. A much longer delay has been observed in the growing of the second teeth. Helmont saw “an old man and an old woman, in the “sixty-third year of their age, in whom the teeth “which they had before lost, grew again of their own “accords. But he did not find that they lived the “longer for that, as both died within the same year ^d.” We read ^e of a carpenter of eighty-four years of age, in whom there grew, in the space of two years, four teeth; two fore-teeth, and two eye-teeth. I myself saw two grinders grow in an old woman who was past her eighty-sixth year; she died in the eighty-eighth year of her age. It is surprising that the rudiments of
teeth,

^b B. S. Albin. acad. annotat. lib. ii. p. 3. et seq.

^c Ibid. p. 9.

^d In capitulo, *Arcana Paracelsi*, p. 626. col. 2.

^e Acad. des

Sciences, l'an 1730. Hist. p. 56.

teeth, which were to grow in so advanced an age, could so long lie hid in the jaws.

Hence Moschion^f wisely laid it down as a rule, that the teeth begin to grow in the seventh month, but that this does not hold equally in all children.

Indeed, according to the course of nature, teeth grow out of each jaw; however, they sometimes grow out of other places. I have seen a cheek-tooth grow out of the midst of the palate. Ruysch^g kept in his cabinet, a bone of a human palate, from the midst of which there grew a cheek-tooth. An account has been given of many deviations of the teeth^h.

The fore-teeth generally come out first of all; but most commonly, before the eight fore-teeth have all come out, one or two of the cheek-teeth come out. Then there follow, but with a considerable interval between, four eye-teeth. We readⁱ, that in North-America, in an island which is named from the dogs that are found in it, the inhabitants have the incisores that like the grinders. It would gratify our curiosity, if we could know whether such fore-teeth grow in themselves, as they grow out of the jaw-bone with as much difficulty as the grinders.

As, therefore, the teeth lie hid in their holes, not those only which are first to come out, but others likewise which usually grow about the seventh year, begin to be increased in bulk; whilst they strive to come out, they are fortified with a hard crust, that they may afterwards be able to perform their functions. I believe the manner in which this is effected, is not yet known to us: for who could ever give a clear and solid reason why the first tooth begins to increase in bulk, to rise, and to make a passage for itself, whilst the second tooth, which is under it, continues unmoved, but will do just the same in the space of seven years? We plainly see this effected, though we do not know the manner how. These sprouts of the teeth stick in the holes of the jaws; but the passage from each of these holes

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^f Spach. Gynæc. p. 10. n^o 117.

^g Mus. anatom. five catalog.

var. p. 177.

^h Albin. acad. annot. lib. i. cap. 13. p. 52.

Acad. des Sciences, l'an 1722. Mem. p. 446.

is covered with a membrane tolerably dense, resembling a sort of leather, which must be bruised or even torn by the tooth; so that after the tooth has burst out, scraps of this torn membrane have been observed by Herissant ^k, a person of great accuracy in the investigation of these matters. Afterwards these scraps being dried, fall of themselves. The tooth which is to burst out, must therefore exert force sufficient to break this membrane. The admirable De Lafone ^l, who has published excellent observations concerning the organisation of the bones and the teeth, is of opinion, that after the upper part of the tooth has grown hard, the inward slimy part continuing to vegetate, and not being able to surmount the hard obstacle in the upper part of the tooth, presses upon the lower parts where there is less resistance; and he imagined that the roots of the tooth were formed by this mechanism, which being produced below, and meeting with the bony hedge which lies between the first and second tooth, they can descend no longer, but the same force that lengthens out the tooth continuing to act, the upper part of it must necessarily be raised, so that the membrane which covers the holes, must be raised insensibly, and the tooth will come out. This is certainly an ingenious explanation, and yet it does not solve the difficulty just started, as there does not appear to be any reason why this vegetation should act so powerfully in the first tooth, whilst it for so many years remains without force in the second tooth, which is so near the first. Besides, I took out and examined several first teeth when they began to be loose, and in many I did not find even the smallest appearance of a root. Skilful surgeons, who were justly looked upon as very expert in curing disorders of the teeth, were surprised at this. They were agreed that the teeth, which generally fall about the seventh year, had had roots; whilst they with very little force took out those that were loose, they found no roots. In order to explain this, they said that the second tooth,

whilst

^k Acad. des Sciences, in 4to. l'an 1754. Mem. p. 431.
l'an 1752. Mem. p. 268.

^l Ibid.

whilst it rises, rubs the roots of the first, and so reduces it to a very subtile powder, which might vanish entirely, for nobody ever found it. But could the action of the second tooth, slowly ascending, whilst it moves the first out of its place, have such power as to reduce the roots of the former to powder? Bourdet^k, a great proficient in this branch of surgery, asserted, that the first teeth, before they are loosened, have roots as strong and hard as the second. But whilst Bunon refutes the opinion of those who maintained that the roots are destroyed by the friction of the second tooth ascending, he appeals to what is found in the jaws of a body just dead, whilst the second teeth begin to ossify, and the first teeth, called the milk-teeth, are still in their places, “whether they stick firmly,” or are already loosened to a certain degree. For it appears, that the second tooth, whilst it rises, continues rolled up in its membrane, till it is upon the point of coming out. Therefore a membrane is placed between the roots of the milk-tooth, and the second tooth which is rising. Yet the roots of the milk-teeth are already destroyed before the second teeth can touch them. Besides, but a little distance is observed between the first tooth and the second; wherefore he concluded, that the root of the milk tooth is consumed by another cause, and not by the friction of the tooth underneath. For this reason, he chose rather to believe that some sharp humour is separated from the adjacent parts to consume these roots.

I must own it appears to me a much more probable opinion, that the milk-teeth are without roots. The celebrated Albinus, treating of these subjects, says, “When teeth assume the nature of a tooth, there first rises a sort of shell in the form of an open husk; and this belongs to the body of the tooth, the root being not yet begun^l.” I have often seen such bodies of teeth, without any appearance of roots, in the dissected jaws of abortions and children just

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^k Recherch. et observat. sur l'art. du dentiste, sect. v. p. 511. ^l Annot. acad. lib. ii. cap. 2. p. 16.

born. There are copperplates with admirable representations of these^m; where may at the same time be seen in what manner roots are successively protruded from the body of the tooth. The tooth was of consequence without roots; and whilst the milk-tooth falls, it is without roots. Does it seem probable that roots have grown to the milk-tooth, and have again been destroyed before it fell, whilst no probable cause of the destruction of the roots could ever be discovered? It appeared evidently from what has been already said, that this could not be occasioned by the friction of the second tooth as it rises. How precarious a resource is a corrosive liquor upon such an occasion!

But certain observations seem to shew, that the milk-teeth, if they do not fall at their proper time, or are not taken out when they grow loose, are capable of protruding roots from their body, by which being afterwards fixed in the jaws, they stick there during the whole life.

I have often attentively examined milk-teeth, which either fell of their own accord, or were taken out by the hand of a surgeon, and have found the lower border not even, but here and there rough with prominences and sharp pieces jutting from it, which in those in whom the milk-teeth had been longest left, I found much longer than in others, with their concave answering to the convex surface of the tooth underneath; so that they plainly suited themselves to the neighbouring obstacle, that they might be able to descend the lower. Bourdetⁿ, who has been already spoken of with applause, saw the same things, though he was of a different opinion. Six weeks before, an eye-tooth had perforated the upper part of the gum in the upper jaw of a girl of sixteen years of age: the milk eye-tooth which answered to it, had kept its place; it was however very loose; whilst he took it out, he saw that it had some part of a root, and that this was made uneven by certain points or roughnesses: hence

^m Ibid. tab. ii.

ⁿ Recherch. et observ. sur l'art du dentiste.

hence one of those who were with her, firmly believed, that, the tooth being broken, the root had remained in its hole: he acknowledges that he could hardly convince her of the contrary. Besides, I have often known the milk-teeth, much pressed by the two next teeth, not to have been loosened at the time that it should fall according to the course of nature, and therefore left in its place at the same time that the second tooth emerging, pierced the jaw-bone either before or behind, whereby a deformity was sometimes occasioned; to remove which, when the milk-tooth now firmly sticking was taken out, it appeared endued with roots. Whence it is justly concluded, that the milk-tooth can produce roots downwards. For if, according to the opinion of many, the roots of the milk-tooth had been consumed at the time that it was to fall, new ones would have sprouted up; and then we would be obliged to allow that roots had twice grown in the same tooth. Whence it appears, that the milk-teeth, according to the course of nature, are without roots, when they fall of their own accord; but that they are capable of producing roots if left long in their place; and that often in milk-teeth, when they fall of themselves, or are pulled out when loose, the first traces of the sprouting roots are discovered, which are by some looked upon as the remains of the worn out roots that were there before.

Though the sprouting of the teeth be natural, and happens in many children without causing much uneasiness; yet, in some, it is attended with very bad symptoms, which are sometimes attributed to other diseases, though they proceed from the breeding of teeth alone. Wherefore Sydenham^o earnestly advises, to examine with the utmost care, at the time that epidemic fevers are rife, and children are taken ill, whether that fever should be referred to the epidemic disorder, or proceeds from the breeding of teeth: “ For it is generally known, that children are often, “ by the pains arising from the breeding of teeth, “ thrown into fevers, which cannot be easily distinguished.”

“guished from fevers of a different sort.” It is therefore worth our while to consider those symptoms, which shew that the breeding of teeth is at hand, or is already begun.

It appeared from what was before said, that the time of breeding teeth was very uncertain, and therefore is not of much importance amongst the symptoms of tooth-breeding, excepting that it excites the attention of the physician, and makes it necessary for him to be particularly watchful about the seventh month.

Hippocrates reckons “an itching and pricking
“of the gums, fevers, convulsions, and looseness,
“as signs of teeth-breeding, especially when
“the eye-teeth are cutting, and that these chiefly
“happen to gross children, and to those who
“are collicive ^P. The first symptom of the breeding of teeth beginning, that I could observe, was, if the upper arch of the jaw, which is formed of the converging plates of the holes, begins to grow broader; these plates insensibly separating from each other, that room may be made for the tooth, which is upon the point of bursting out. This seems to be effected by the tooth ascending insensibly; at this time they seem to feel an inward itching, as it were, in the jaw itself, whilst they perpetually rub their faces, chiefly their nostrils and chin; for neither do the gums, nor the membrane which covers the holes, yet appear red or stretched. At the same time, the children are less quiet at night, and more peevish than usual; nor is this a bad symptom. For Hippocrates ^Q has given us to understand, that “there is
“reason to apprehend, that such children breeding
“teeth, as are quiet, and sleep sound, may be seized
“with convulsions.”

Harris^r reckons two times of teeth-breeding; one whilst the tooth strives to emerge out of the jaw-bone, and then these symptoms are observed. He admirably observes, that at this period of tooth-breeding, “the
“gum

^P Aphor. 25. sect. iii. Charter. Tom. IX. p. 120.
^Q Lib. de dentit. textu 9. Charter. Tom. VII. p. 871.
infant. p. 35.

^Q Lib. de
De morbis acut.

“ gum is surrounded with a sort of whitish circle in
 “ its external or upper part, and that without any swelling of the same.” Sometimes there appear two such places, or more, as if the tooth, upon the point of coming out, shone through the gum. Sometimes this period of tooth-breeding lasts for some weeks before the other begins, “ in which the tooth being increased
 “ in bulk, and become bigger, always makes the gum
 “ swell, causes a remarkable inflammation in it, and
 “ makes an effort to break through it with all its force.” This is true of a difficult breeding of teeth: but teething is often effected more easily; and then all these symptoms are so slight, that the tooth may come out unperceived by those that take care of the children. At the same time, there is a greater quantity of spittle than usual, and sometimes a cough: there is a running at the nose, the cheeks are red through the irritating of the emerging tooth, the humours having flowed to the head in a greater quantity than usual; as appears from many symptoms which are to be met with collected in authors.

Thus Moschion observes, “ There is an itching of
 “ the gums, an heat in the cheeks, a pain of the nerves
 “ in the neck, frequently a bloody humour comes out
 “ at the mouth or the ears.” We likewise in Aëtius, meet the following observations concerning the breeding of teeth: “ Children begin to breed their teeth about the seventh year of their age; they are dis-
 “ quieted, and goaded by a sort of a stake, the tooth
 “ cleaving the gums. There follow inflammations
 “ of the gums, the jaw-bones, and the tendons,
 “ which are generally succeeded by fevers. There
 “ also follows an itching in the auditory passages, and
 “ the ears grow moist: an inflammation of the tunics
 “ of the eyes seizes upon some, and the blood runs
 “ from the corners of the eyes. In many, the belly
 “ is disordered, on account of the inflammation of the
 “ stomach, and the belly’s being relaxed.”

But as all these disorders proceed from the stretching,

§ Mosch. apud Spach. Gynæc. p. 10. n^o 118.
 p. 68.

† Lib. iv. cap. 2.

ing, pricking, and laceration of the nervous and bloody gums, it is evident enough, that these bad symptoms are still more to be apprehended when the eye-teeth burst out, as these have an obtuse top, and are pretty thick. But the fore-teeth are like a sharp wedge, and therefore more easily cut the incumbent membrane. But the grinders, though they have a larger surface than the eye-teeth, and four tops, are more easily born, because their points do not emerge all at once, but successively. It is easily conceived, that convulsions may be justly apprehended in children from an intense pain alone. Whence likewise, (see §. 1073, no 4.) the breeding of teeth is reckoned amongst the causes of the epilepsy: where it is also observed from Hippocrates, that all do not die convulsed by the breeding of teeth, but that many escape, as daily observations shew in practice. But if the gum swells, and is at the same time very red, it is a symptom of a violent inflammation, which sometimes terminates quickly in a gangrene, especially if the humours at the same time are somewhat of the sharpest. With regard to this subject, see what has been said in the chapter upon the Gangrene. The gums being thus affected, quickly rot, and the disorder spreads to the adjacent parts, except the place affected by the gangrene be often washed in the spirit of sea-salt mixed with the honey of roses, and so the spreading putrefaction stopped. I have sometimes in the children of poor people, who were totally neglected, seen part of the jaw-bone fall, with the holes, and the teeth contained in them, so that they were all their lives toothless in the place of the broke jaw-bone.

Green stools.] This, at the time of tooth-breeding, is a bad symptom. It was before said, that the excrements turn green when they are troubled with an acid in the primæ viæ; so that green excrements might for this reason be voided by stool, though this was not occasioned by tooth-breeding. But if the excrements, which naturally turn yellow in children, should on a sudden become greenish at the time of tooth-breeding, then skilful physicians are usually ap-
pre-

prehensile of convulsions; because they conclude from that change of colour, that the common sensory, and the whole nervous system, are disordered. If a man in health be suddenly turned round and round in a circle, he is seized with a vertigo; and if this turning is not discontinued, he falls down, and vomits up green gall. Wherefore it is likewise reckoned at §. 275. a bad symptom, if after a violent blow on the head a bilious vomiting follows.

But a looseness is rather an advantage to children. *Those who, whilst their teeth are breeding, are very loose, are less convulsed than those who are but a little so^u.*

A salivation.] We have already treated of the salivation which follows the breeding of teeth.

A fever, death.] A troublesome pain, an inflammation of the gums, want of sleep, are sufficient to cause a fever; which may certainly, if violent, destroy the tender body. Hippocrates, however, does not seem to have always apprehended fatal consequences from the fever which accompanies the breeding of teeth; for he says: *Those who are seized with a fever whilst their teeth are breeding, are seldom convulsed^v.* But he asserted that the winter-season was best adapted to the breeding of teeth^w; so that children get over it better, cæteris paribus, at this than other seasons of the year. At the same time he observed, that in those who have a cough whilst their teeth are breeding, the teeth burst out more slowly, but that they are more extenuated by the pricking. For the plumpness of the body is generally diminished in all those whose teeth are breeding, and the flesh generally becomes more flaccid, especially when the eye-teeth begin to come out.

§. 1375. **A**LL which disorders may be easily demonstrated to arise from one and the same cause.

For the membrane which closes up and covers the
holes

^u Quibus indentitione alvus multoties subducitur, illi minus convelluntur quam quibus ita paucies. *Hippoc. lib. de dentit. Charter. Tom. VII.*

^v Quibus indentitione febris acuta oberitur, raro convelluntur. *Ibid.*

^a Ibid.

holes is gradually distended; if there already be an inflammation, and that inflamed place was to be burst by a hard tooth, the reason is obvious why all those bad symptoms just enumerated must follow.

§. 1376. **B**UT by removing the irritation of the nerves (§. 1374.) all these symptoms cease.

Pain, as was said upon another occasion at §. 220, and the following, affects the nervous fibre in such a manner as to threaten breaking it: hence the pain is more acute, when the nervous fibre is nearest breaking. Hence it appears why all pains are increased when the tooth is upon the point of bursting out, and cease again as soon as the tooth has broke the membrane which was stretched before. For the nerves then cease to be irritated. From whence it appears, what we should think of all those charms and amulets, which are usually hung to the necks of children whilst their teeth are breeding, in hopes that the teeth will come out the more quickly and the more easily. The breeding of teeth is the work of nature alone; no judicious person will easily believe that nature can be easily accelerated by art. But the pains which accompany the coming out of the teeth may be assuaged by art, as will be shewn in the next paragraph. But women are without much difficulty permitted to hang on to the neck of children, whose teeth are breeding, red coral, the root of piony, wolves, boars and foxes teeth, and things of the like nature, which can be productive of no ill consequences: for then they are more careful to follow the physicians directions.

§. 1377. **W**HICH is effected, 1. By softening, cooling, and relaxing the gums with soft, glutinous, and antiphlogistic remedies. 2. By rubbing them often against hard, but smooth bodies. 3. By laying them open with a lancet.

1. How

1. How great efficacy all those remedies have which relax a stretched fibre that is in pain, in alluaging that pain, was already shewn at §. 228, n^o 1. But as this membrane that keeps down the tooth, that is ready to burst out, is stretched and in pain, the reason is plain why emollient remedies have place here: but as the gums are, generally speaking, at least slightly inflamed at this time, they are for this reason refreshed with cooling and antiphlogistic remedies; which are of the highest service, if they are at the same time somewhat glutinous, lest they should be immediately washed away by the copious spittle, which runs out when the teeth are breeding. The juice of the greater house-leek, just pressed out with the syrup of violet flowers, with an addition of the slime of Arabian gum, gum Tragacanth, Cydonian seed, &c. furnishes a very fit remedy of this nature, if the gums be often rubbed with it. The fresh cream of milk, mixed with the yolk of an egg, and the syrup of violet flowers, is highly beneficial if it be diluted with a certain quantity of distilled rose-water. Elder-flowers, if they are tied up in a little bundle, and laid at the bottom of a glass vessel of a cylindrical form, and fresh milk is afterwards poured upon them, and all these are gently digested chemically, a cream is soon gathered at the summit of the vessel, which has the fragrant smell of elder-flowers, and is often rubbed upon the gums with a very good effect; but the lead is added to make the little bundle sink to the bottom of the vessel, that the cream may be the more easily gathered on the upper surface: at the same time, lead applied externally is of great efficacy in allaying inflammations in their beginning. I am not however ignorant, that the internal use of lead is thought dangerous by physicians, and not without reason: but very little of the lead is dissolved in the milk; and the little that is dissolved rather remains in the serum of milk than in the cream; so that it appears that such a remedy may be used with safety, especially as but little cream is rubbed upon the gums which are in pain, and the child scarcely swallows any of it, but it almost all comes out of the

mouth with the spittle, which flows thither copiously. But if the gums, tinged with a deep red, should threaten a gangrene, then a few drops of the spirit of *sal marinum* are added to the syrup of violet flowers, with a mixture of nitre also; and they are diluted in distilled rose-water, or elder-flower water, that the gums may be often fomented with such a mixture. Before, where the gangrenous quinsy was treated, as likewise in the chapter upon the Scurvy, the efficacy of sea-salt in such disorders was spoken of advantageously. But such prescriptions are to be met with in the *Materia Medica* at this article.

It sometimes happens that the gums are so inflamed, and in such pain, that there arises a violent fever followed by convulsions: in that case, Sydenham^a recommends bleeding as the best and surest remedy; and at the same time he lays it down as a rule, that children may be bled with as little danger as grown men. Harris^b acknowledges the necessity of bleeding in such cases; but he would rather have a leech or two put under each ear: for it is certain that there is some difficulty in bleeding children, on account of the smallness of the veins, and the restlessness of their motions. Nay, even Sydenham himself^c, when he thought bleeding necessary in a fever, accompanied by a bloody flux, said, “If a child is troubled with this sort of fever, then two leeches should be put under each ear.” But it is generally known, that Sydenham wrote this work in the latter part of his life, and that he either altered or corrected some passages that he had wrote before.

Harris gives us this excellent instruction: “That when the teeth are breeding, the mouth is sometimes so tender, that they obstinately spit out all sorts of food: in this case the utmost care should be taken not to give hot, nor even so much as warm food to children; for an almost burning heat of the mouth and jaws can scarcely bear the least degree of added heat without pain and anguish, uneasiness
“ being

^a Prax. medic. cap. 5. p. 248, 249.

^b De Morb. infant. p. 35.

^c Schedul. monitor. de novæ febris ingressu, p. 673.

“ being occasioned by it ^d.” Whence it is that children can scarcely bear a spoonful of any thing, which shews the advantage of deferring to wean them till the teeth are grown; for they can much more easily bear the soft nipple of the nurse. Add to this, that we may give the nurse a quantity of emollient and anti-phlogistic remedies, which may be of service to the child. At the same time we may, by altering the diet of the nurse, render her milk more suitable to the present disease of the child. Moschion ^e acknowledges this advantage, when he advises that the nurse should abstain from wine when the child’s teeth are breeding, and should live upon mild food.

It appears at the same time, that this advantage is given up by those who are against human milk, and would have children fed with the milk of other animals.

2. Those who have wrote upon the breeding and preserving of the teeth, have adopted different opinions with regard to this point. Some have approved of the use of milk, others have entirely condemned it. If the inflamed gum should feel pain, the attrition of hard bodies would certainly hurt them; but then children cannot even bear the touch of them, without immediately discovering their pain, by crying bitterly. But when this is not the case, a gentle pressure of the gums seems to be directed by nature. At the time of breeding the teeth, we see that children are perpetually rubbing their teeth with their fingers, and that they put whatever comes in their way into their mouths, and press it as strongly as they can between their jaw-bones: for they seem to feel a troublesome itching in their gums, which they endeavour to assuage in this manner; for they discover no symptoms of feeling any pain; on the contrary, they are in spirits, and quite easy whilst they are not kept from this work; and I have often seen very restless children fall into a profound sleep, when the nurse gently rubbed their itching gums with her finger.

N n 2

Aëtius

^d In the passage just cited.

^e Spach. Gynæc. p. 10

Aëtius ^f indeed advised, that care should be taken not to give any thing hard to children to eat, lest the gum, being become callous, should obstruct the breeding of the teeth: the same opinion is maintained by others ^g. But callosity does not seem so much to be apprehended from this friction, as the bone is always moist at the same time. Nay others ^h even wish for this callosity, as they imagined that tight and hard membranes are more easily broke than the soft, which yield too much to the rising tooth. Wherefore Andry blamed the use of emollient remedies, except the inflammation of the gums required them; and because all the bones become more brittle in winter, he thought that it was for that reason that Hippocrates asserted that winter is a more favourable season for the breeding of teeth than the other seasons of the year. He adds from the observations of Spigelius, that the teeth sooner burst out in the upper jaw-bone, because this is oftener turned upon the nurses nipple than the lower, and is more rubbed by it of consequence.

Therefore, as nature itself seems to direct rubbing the gums in children whose teeth are breeding, it will be of service to give them at that time such hard, smooth bodies, as are made of chrystal, red coral, ivory, &c. so be they have no prominencies, and are made of such matter as cannot be dissolved in the saliva; wherefore those made of crystal are preferred to others: metals are rejected, the purest gold only excepted; for the silver which is used in making these things always contains a certain quantity of copper.

3. Cutting is proper then only when the membrane which covers the hole is by the emerging tooth raised and stretched, is red, and feels intense pain; then there is generally a pretty high fever in the case, and convulsions are apprehended, except a way is suddenly made for the tooth: but after cutting, the tooth instantly rises up. But if the tooth should stick still more deep whilst this cut is made, the little wound is in a short

^f Lib. iv. cap. 9. p. 68.
&c. Tom. I. sect. iv. p. 40.
p. 210, et seq.

^g Bourdet recherch. et observat.
^h Andry, l'Orthopedie, Tom. II.

short time consolidated, and the little scar will make still greater resistance to the tooth. The reputation of the physician will likewise be in great jeopardy if the tooth does not make its appearance after he has advised cutting. I have known it happen, that the tooth has not burst out till eight months after the incision has been made.

It was before observed at §. 1374. that there are two periods in the time of teeth-breeding. The first is when the tooth first makes an effort to rise out of the jaw-bone; the symptoms of this were then enumerated. The second period is when the tooth labours to break through the gum. But Harris has given us to understand, That, “in the first effort of tooth-breeding, as well
“as in the second, surgeons at random unskilfully cut
“the gums of children, that the teeth may the more
“easily burst out; whence the wound being unnecessary, and, generally speaking, proving of no service, is made unadvisedly in tender children; when
“the second period of tooth-breeding alone (and this
“should be diligently attended to) properly requires
“that this incision should be madeⁱ.”

He was moreover against making an incision upon this occasion with a lancet, as such a wound is consolidated too soon. Wherefore he advised, “That
“the physician should take care to use a more proper
“instrument (whether it be a penknife or another instrument, whose back in thickness almost equals a
“razor) in making the incision.” For thus the lips of the wound are more distant from each other, and grow together more slowly. It is perhaps for this reason that some would have^k this membrane, which covers the hole, torn with the nails; for then the wound will of consequence be consolidated more slowly: but it is sufficiently evident, that this causes greater pain, and is done by an unskilful hand; so that cutting seems always preferable in such a case. Fauchard^l, eminent for his knowledge in this branch of surgery, gives us
to

ⁱ De Morbis infant. p. 35.
enfants, Tom. I. p. 234.
chap. 15. p. 175.

^k Brouzet ednat. medic. des
^l Le chirurg. dentiste. Tom. I.

to understand, that the incision for the fore-tooth upon the point of bursting out should be made along the length of the arch of the jaw-bone; I should be inclined to think the same of the eye-tooth: he advises a crucial incision for the cheek-tooth; but he at the same time wisely informs us, that such an incision may be then made with safety, if the gum be red, swelled, and tight, if the tooth be perceived by the sight or touch, whilst it sticks under the membrane which keeps it down. But having learned it by long experience in the art, I affirm that there seldom is occasion for this operation, even in the most difficult breeding of teeth.

§. 1378. **C**ONVULSIONS, arising from dentition, are happily removed by moderate doses of spirit of hartshorn.

It was said at §. 229. that the sense of pain, and many effects of pain which arise from thence, may be removed, though the cause of the pain remains. Hence mild assuaging remedies prepared from *syr. flor. rhæad.* and from the poppy itself, may safely be used for this end, to my certain knowledge, provided other things which act upon the cause of the pain be not neglected. It appears from the observations of Sydenham^a, that a few little drops, three or four, for example, of spirit of hartshorn, given in a proper vehicle, have been of great service in curing that fever, which accompanies a difficult breeding of the teeth, if they are given every fourth hour at four or six different times. Such a prescription is to be found in the *Materia Medica* at this article.

^a In sched. Monit. de novæ febris ingressu, p. 675.

